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Connecticut Medicine

The Journal of the Connecticut State Medical Society

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The Epidemiology of AIDS in Connecticut

PATRICIA J. CHECKO, M.P.H., JULIA WANG MILLER, PH.D.
AND CLARE AVERBACH, R.N., M.P.H.

ABSTRACT—From 1980 to 30 September 1990, 1,769 Connecticut cases of AIDS have been diagnosed and reported. The epidemiology of AIDS in Connecticut continues to differ from national patterns in several important ways. Intravenous drug users (IVDUs) have been the most prominent source of new cases since 1986 and made up 49% of all cases reported in 1990. Women comprise 20% of the total adult caseload; twice the national average. Connecticut's pediatric cases are 3.3% of total cases, the highest proportion among US reporting areas with 100 or more total AIDS cases. Blacks and Hispanics comprise 55% of cases, although they represent only 11% of the total population of Connecticut. The most recent annual incidence rate for Connecticut is similar to that for the country as a whole (13.3/100,000). However, Connecticut's three central cities had annual incidence rates that are much higher: Bridgeport, 28.7/100,000; New Haven, 55.5/100,000; and Hartford, 64.9/100,000. The Department of Health Services estimates that approximately 12,000 persons in Connecticut are currently infected with the human immunodeficiency virus (HIV). About 4,200 intravenous drug users are already infected. In addition, we estimate that approximately 800 new infections will occur in adults and adolescents each year. Data from various New Haven based seroprevalence studies indicate that seropositivity is high. Among patients in clinics for sexually transmitted diseases, one in every 25 was infected with HIV; among women attending women's health clinics, one in 91 was infected. While there is some evidence of a slight slowing of the AIDS epidemic, and therapeutic advances are promising, we cannot lose sight of the fact that AIDS has been diagnosed in no more than 15% of persons currently infected. Up to 2,700 persons with AIDS may require care in 1993 alone. Planning and expanding health care services to meet the needs of HIV infected persons is a continuing challenge to both government and health care facilities and professionals in Connecticut.

Magnitude of the Problem

FROM 1980 through September 1990, 1,769 Connecticut cases of AIDS have been reported to the Centers for Disease Control (CDC) (Figure 1). Connecticut ranks 14th in the United States for the total number of cumulatively reported cases, and overall accounts for 1.2% of the United States cases. The overall statewide incidence rate from July 1989 through June 1990, was 13.3/100,000, slightly lower than the national rate of 15.4/100,000. Connecticut ranks 13th in the United States for incident cases per 100,000 population. In order to compare metropolitan areas in the United States, the CDC has calculated 12-month incidence rates for large metropolitan areas. For the New England states, New England county metropolitan areas (NECMAs) are used; in the rest of the country, metropolitan statistical areas (MSAs) were the basis for analysis. NECMAs are similar to counties for purposes of comparison. The rates for the Bridgeport, New Haven, and Hartford NECMAs resemble those of other large metropolitan areas: 14.0, 16.2, and 13.7 per 100,000. Boston's rate, for example, is 16.1. However, the three central cities in these NECMAs had very high incidence rates based upon 1989 population estimates: Bridgeport, 28.7; New Haven, 55.5; and 64.9 for Hartford. These rates are similar to those reported from highly urbanized metropolitan areas in New York and New Jersey. For the same time period. New York City reported an incidence rate of 75.3 and Jersey City reported an incidence rate of 52.1.

Although two-thirds of all cases have been reported from eight urban areas, the epidemic has spread throughout the state. Of Connecticut's 169 towns, 129 have re-

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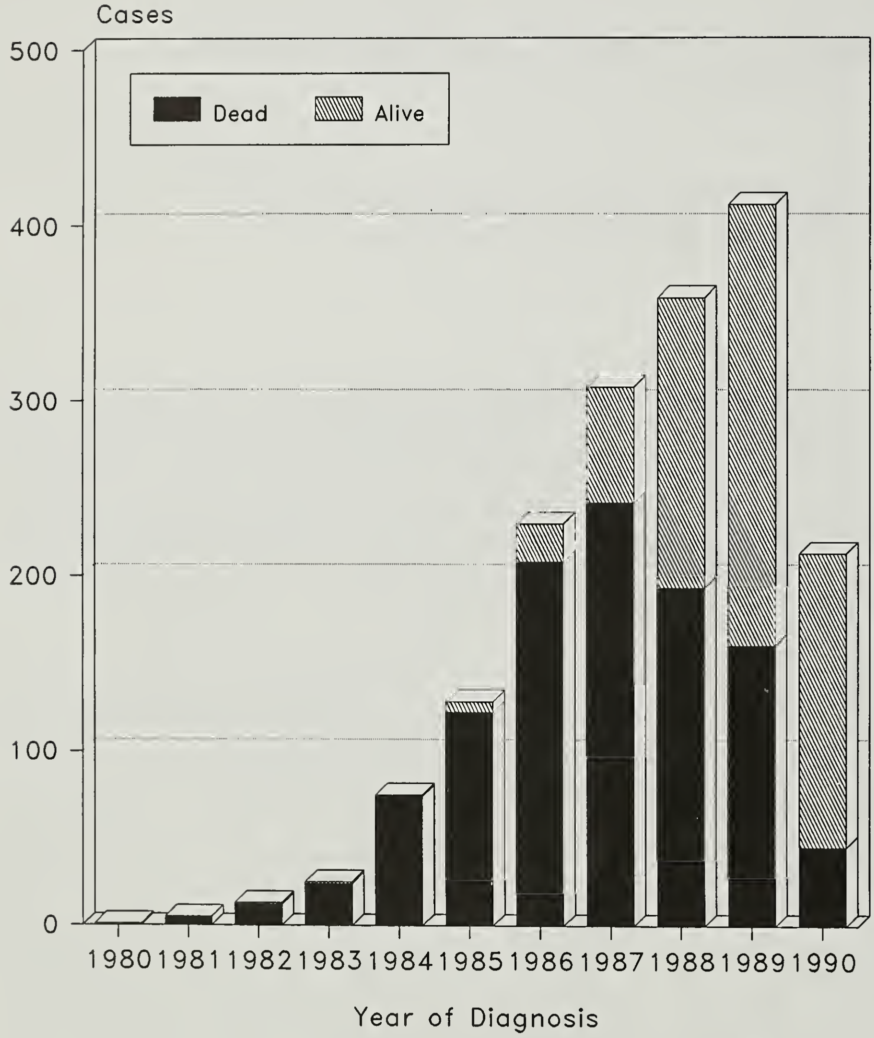
Figure 1
AIDS Cases and Deaths By Year of Diagnosis
Connecticut Cases as of 9/30/90



Each bar represents total cases diagnosed that year; dark segment indicates cases known to be dead regardless of year of death.

ported at least one case. New Haven, Fairfield, and Hartford counties continue to report the most cases (89%). Towns in Connecticut with 200 or more cumulative reported cases are New Haven (335) and Hartford (291); those with 100 or more cases are Bridgeport (168) and Stamford (115); and those with 50 or more cases are Waterbury (71) and Norwalk (65). Of the 1,769 reported cases, 1,069 are known to have died. In 1988 AIDS was the fourth leading cause of death for both men and women in the 25-44 year age group in Connecticut and the sixth leading cause of death among persons 15-24 years old.[1]

AIDS by Transmission Category

Figure 2 depicts the relative contribution to AIDS by underlying risk behavior category and trends over time. In Connecticut the relative percentage of all cases attributable to intravenous drug use has been increasing over time, so that intravenous drug use is the leading AIDS risk behavior in Connecticut. In 1988 Connecticut was one of three states, including New York and New Jersey, as well as the commonwealth of Puerto Rico, where the proportion of newly reported cases of AIDS in IVDUs equalled or surpassed those in homosexual or bisexual men. Overall, 39% of Connecticut AIDS cases are intravenous drug users vs 21% nationally. In 1990, thus far, IVDUs represent 49% of newly reported cases. If heterosexual cases whose partners are known to be IVDUs and pediatric cases in which the mother or the mother's male sex partner is an IVDU are included, the proportion of all cases in which drug use is involved increases to 61%. The proportion of AIDS cases among homosexual/bisexual males has decreased from 48% of all cases prior to 1986 to 33% of cases reported in 1989. From 1986 to 1989 the relative contribution of homosexual/bisexual males and heterosexual IVDUs remained nearly the same. However, since 1989 the rate of increase in new AIDS cases among homosexual/bisexual males has slowed. This general leveling off is consistent with the national experience.

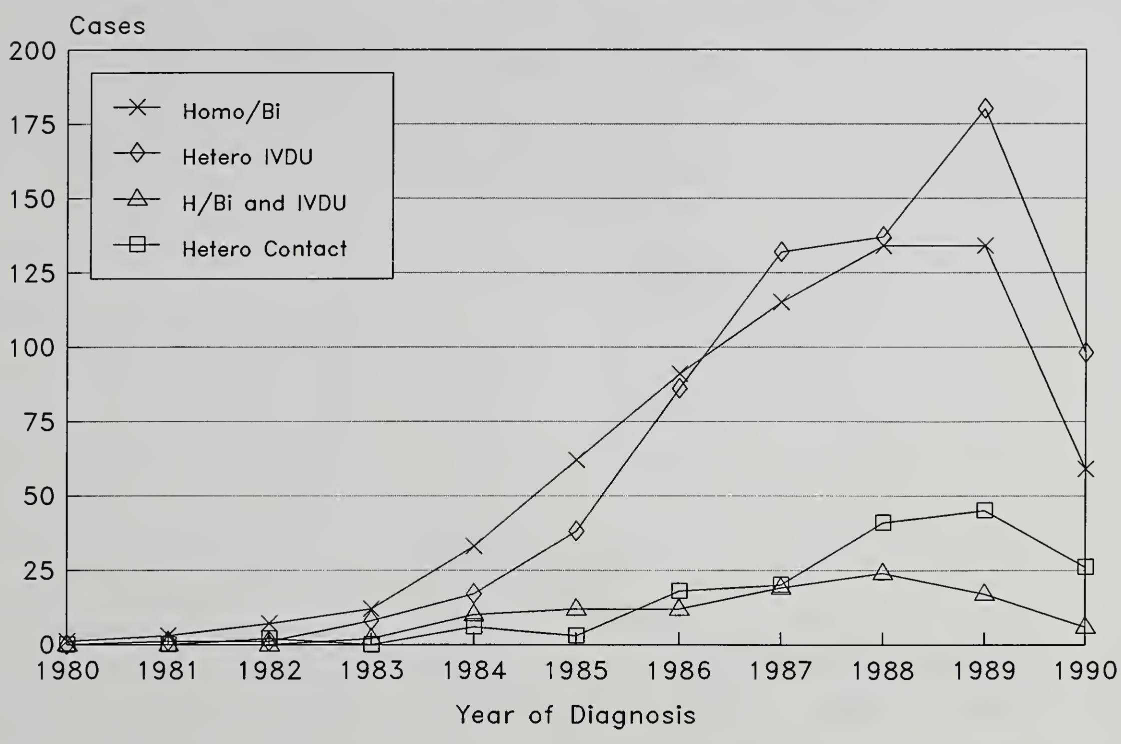
Cases attributable to heterosexual contact have also increased in number from three in 1985 to 55 in 1989. In the last two years heterosexual cases comprised 11% of diagnosed cases. Among heterosexually acquired cases, 69% had sexual partners who were known to have used drugs intravenously.

Finally, the overall percentage of cases with no identified risk group (NIRS) remains low; 3% of all reported cases. Cumulatively, 121 NIRs have been reported of which 64% have been reclassified to a known risk category following intensive investigation; 43 cases remain unresolved, of which 60% have been closed to follow-up.

AIDS by Sex

Connecticut also has a much higher proportion of AIDS cases among women than is seen nationally (20% vs 10%). In the United States women are the fastest growing component of the AIDS epidemic. The proportion of cases

Figure 2
AIDS Cases* By Year of Diagnosis and 4 Transmission Categories Connecticut



* Reported by September 30, 1990

who are women increased from 6% in 1984 to 10% in 1989. If one looks at cases in women form 1981-89, only New Jersey, New York, Florida, Washington, D.C., and Puerto Rico have cumulative incidence rates (CIR) in excess of 20/100,000. Connecticut with a CIR of 18.8/100,000 was in the top 10 reporting areas. As the proportion of cases in IVDUs and their sexual partners increase, we can expect the proportion of cases in women to continue to increase. In 1982 and 1983, only 8% of adult cases in Connecticut were women. Since, 1986, the annual percentage of female cases has ranged from 15% to 26%.

Among women with AIDS, 191 (59%) were intravenous drug users themselves and 105 (33%) were heterosexual contacts of persons at risk of AIDS. Of the heterosexual contact cases, 65% were sex partners of IVDUs. Twenty-seven percent of women with AIDS were diagnosed between the ages of 20-29; five percent between the ages of 20-24, suggesting that they were infected as adolescents. The implications for the epidemic in Connecticut are serious. We expect the number of women with AIDS to increase in future years. Many women who are not themselves IVDUs may have been or are currently heterosexual partners of HIV-positive IVDUs, and are, therefore, at great risk. Some of these women are probably already HIV-positive, but are currently asymptomatic. Based upon AIDS case reports and seroprevalence studies, it is estimated that approximately 2,300 women are already infected with HIV.

Pediatric AIDS

The most devastating effect of intravenous drug use is its role in perinatal transmission of AIDS. By September 1990, over 2,600 cases of pediatric AIDS have been reported nationally. With 59 cases, Connecticut ranks tenth in the total number of cases reported. However, Connecticut continues to have the highest proportion (3.3%) of pediatric cases in United States reporting areas with more than 100 total AIDS cases. Ninety-seven percent of Connecticut's pediatric cases were perinatally acquired, and 75% were directly or indirectly related to IV drug use. Almost two thirds of all cases were one year old or less at the time of AIDS diagnosis.

Pediatric cases in Connecticut have a distinct profile, reflecting their mother's risk behavior. Sixty-four percent (38) are black and 25% (15) are Hispanic; together, minorities comprise 89% of cases. Based upon the seroprevalence survey of childbearing women, it is estimated that 150 newborns are delivered by HIV-positive mothers annually, of whom 45 will be already infected.[2]

AIDS in Minorities

Minorities in Connecticut have been disproportionately affected by the AIDS epidemic. Although only 11% of the

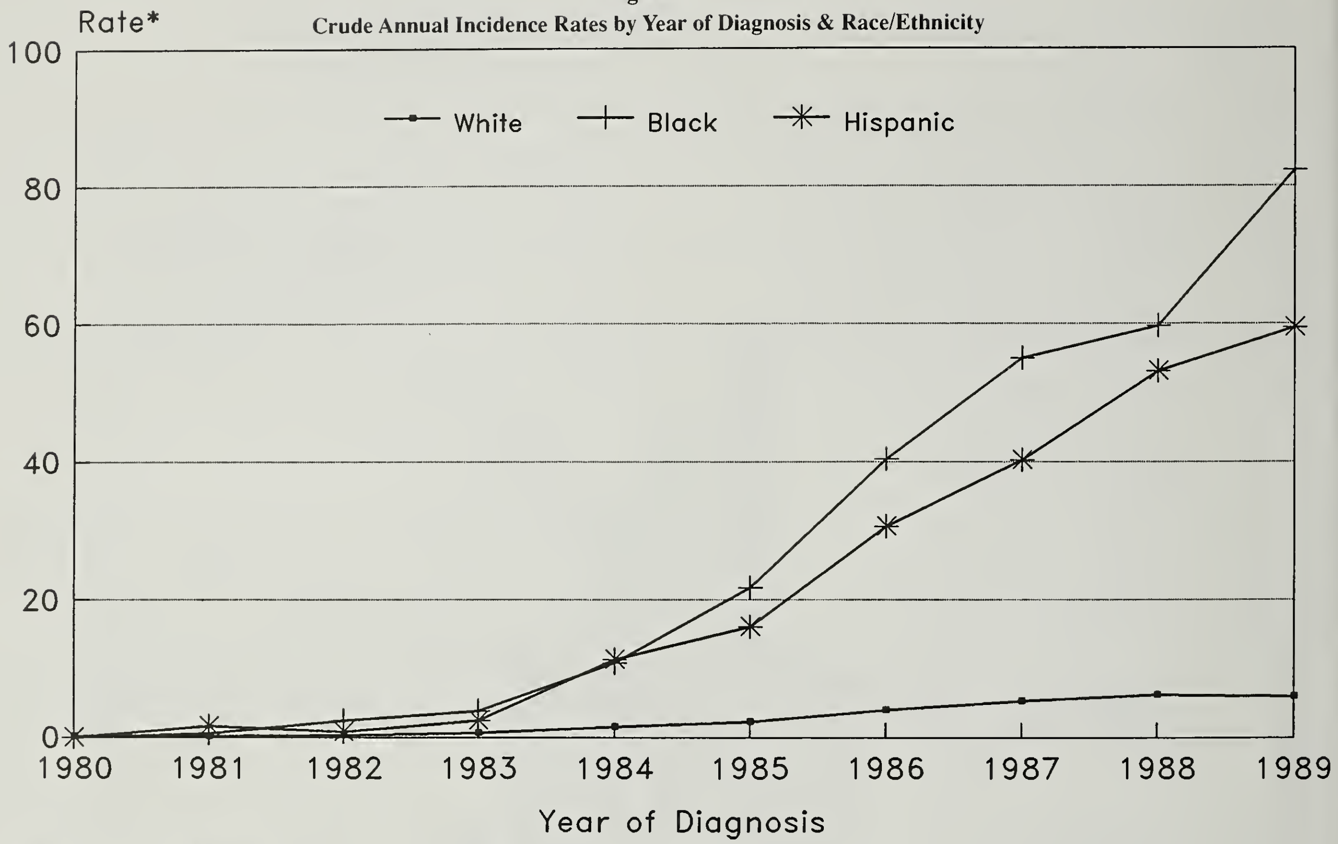


Figure 3
Crude Annual Incidence Rates by Year of Diagnosis & Race/Ethnicity

* Rates per 100,000 population.
** Rates based on cases reported by 9/30/90 and adjusted 1980 Census data.

population is black or Hispanic, 55% of all reported AIDS cases have occurred in these two groups. Blacks and Hispanics have crude incidence rates which have risen steadily from 1983 to 1989 (Figure 3). A view of crude rates by race for 1989 shows a great disparity between whites (6.0/100,000), Hispanics (59.5/100,000), and blacks (82.3/100,000). The ratio of rates for blacks compared to whites was 14 to one, and for Hispanics was 10 to one. This higher relative risk for AIDS is true for both men and women. This high relative risk has been corroborated in seroprevalence studies in Connecticut.

Among minorities, intravenous drug use and sexual transmission from drug users appear to be the largest sources of HIV transmission. Altogether, 75.1% of cases of AIDS in minorities have been drug related: 62.8% in drug users, 8.0% in heterosexual contacts of drug users, and another 4.3% in offspring of IVDUs. One third of all cases among men who had a history of sex with men have been minorities, a figure three times the minority representation in the population as a whole.

Thus, prevention efforts targeted to minorities need to be directed at all types of risk behavior, including drug use, sexual transmission, and perinatal transmission.

Seroprevalence Studies

As of September 1990, there were six ongoing sources of information on HIV antibody seroprevalence in Connecticut. These are shown in Table 1. The New Haven NECMA was selected as a sentinel area for conducting clinic-based surveys as part of the national family of surveys. Two survey years have been completed in the sexually transmitted disease (STD) and women's clinics participating in these blind surveys.

STD patients had an overall seroprevalence rate of 3.8% which did not differ significantly for men (3.6%) and women (4.6%). Rates were higher for blacks (4.2%) and Hispanics (3.1%) than for whites (2.4%). The race and sex differences are not as striking as those noted in data from case surveillance or from other surveys. Rates increased with age from 0.5% among persons 15-19 years old to 11.4% among 35-39 year olds.

Among STD clients who reported intravenous drug use or male clients who reported sex with other men since 1978, the seroprevalence rates were 32.7% and 35.3% respectively in survey year 1 (1989), and 27.9% and 29.2% in survey year 2 (1990). Among states reporting data for 1989, only Newark, New Jersey, had reported rates in IVDUs as high as Connecticut.[3] Among heterosexual clients with no known risk, the seroprevalence was 2.6%. Twenty-nine percent of all HIV-positive persons also had a positive syphilis serology.

Three clinics in the New Haven NECMA are participating in the Women's Clinic Survey. The overall rate for all three clinics is 1.1%, however, differences in rates between clinics are statistically significant (family planning = 0.4%, prenatal = 1.4%, abortion = 2.0%, p=0.004). The overall rate in the Connecticut clinics was 5.5 times the median national rate. Black and Hispanic women were twice as likely to be positive as white women. Rates increased with age from 0.5% in women under 20 years of age to 2.7% in 30-39 year old women.

In addition to clinic populations, sentinel surveillance is also conducted in several broader populations. CDC monitors the results of HIV screening of civilian applicants for military service, Job Corps entrants, and blood donors. For military applicants and blood donors, there is a policy to exclude persons with HIV infection or the principle risks for HIV. The exclusions and associated self-selected bias may considerably reduce the observed seroprevalence. From October 1985 to June 1990, 24,195 military applicants from Connecticut were tested; the cumulative seroprevalence was 0.12% (about one positive for every 800 tested). Cumulative rates were higher for males (0.12%) than females (0.06%) and higher for blacks (0.42%) and Hispanics (0.31%) than for whites (0.04%).[3]

Table 1
HIV Antibody Seroprevalence, by Source and Groups
Connecticut, September 1990

Source	*Group Tested*	*Number Tested*	*Percent Seropositive*	*RR* in Minorities*
Counseling & testing sites (10/89-9/90)	Total	13,039	6.2	3.3
	Intravenous drug users	2,426	17.5	4.0
	Homosexual/ bisexual men	1,739	9.3	2.3
	Heterosexuals	8,149	2.2	6.8
Clinic-based surveys (10/88-9/90)	STD clients	4,790	3.8	1.7
	Women's clinics	3,301	1.1	2.1
Newborn survey (4/89-3/90)	Newborns*	45,890	0.3	9.5
Military (10/85-6/90)	Recruits	24,195	0.12	10.0
Red Cross Connecticut Chapter (3/85-12/89)	Donors	948,868	0.011	

* HIV Antibody test measures maternal IgG
**Relative risk=probability of seropositivity for blacks and Hispanics divided by probability for whites only.

The national survey of childbearing women measures the prevalence of HIV infection among women delivering infants and monitors this rate over time. Because it is population based, important comparisons can be made with other national health data sources and with AIDS case surveillance data.

To estimate HIV seroprevalence among women of childbearing age, dried blood spots submitted from all newborns for metabolic screening were examined for HIV antibodies by standard laboratory techniques in a blinded manner. The overall HIV prevalence was 0.3%. Rates of seropositivity were higher among blacks (1.2%) and Hispanics (0.69%) than among whites (0.10%).

Finally, data from Connecticut's counseling and testing sites provide information which can be evaluated by specific risk behaviors. Voluntary counseling and testing programs funded by the Department of Health Services are available at a number of different settings: family planning clinics, STD clinics, alternative test sites in local health departments and hospitals, community health centers, and drug treatment centers.

Since 1986 almost 25,000 persons have been voluntarily tested at these sites and the overall rate of 7% positivity has been relatively stable over time. Data from the past year indicates rates among male clients (7.7%) were twice the rate among women (3.9%). Rates were higher among blacks (9.6%) and Hispanics (12.6%) than whites (5.6%). Seropositivity was highest among those whose risk for HIV was intravenous drug use (17.5%). Based upon seroprevalence rates among IVDUs and estimates of intravenous drug use provided by the Connecticut Alcohol and Drug Abuse Commission, we conclude that 4,200 IVDUs are already HIV-positive.

Future Trends

The rate of increase in new AIDS cases has slowed, not only among cases attributed to homosexual/bisexual activity, but also, among cases linked with intravenous drug use. Mathematical models predicted about 500 new cases in 1989, however, only 412 reported cases were diagnosed that year, about 20% less than projected by past experience. In the past two years the annual increase over the prior years was about 14% vs 25% in 1987 and 44% in 1986.

If the 1990 case total increases by this same rate we would expect about 470 new cases diagnosed in 1990. General leveling off of AIDS incidence is consistent with the national experience. Leveling of incidence among both white and nonwhite intravenous drug users was reported in New York City and New Jersey beginning in early 1988. The reasons for this slowing are under review and may include decreased rates of HIV infection in prior years, reduced numbers of infected persons progressing to full-blown AIDS because of improved therapies, changes in reporting patterns, and the death of some HIV-infected persons, particularly those engaged in drug use, from other causes not included in the CDC AIDS case definition. Seroprevalence rates do not suggest that there has been a reduction in transmission, and the stable rates among military applicants suggest a steady rate of new infections in persons less than 20 years old. The Department of Defense has estimated that 0.6-0.8/1000 active duty personnel acquired HIV infection each year since 1986. Applying the lower estimate to the state population 15-39 years old, we estimate that *at least* 800 new infections occurred in adolescents and adults in Connecticut each year since 1986.

Although the rate of growth of new cases has slowed, the number of people living with AIDS is projected to increase over the next five years. Treatment with zidovudine (AZT) prolongs survival from advanced HIV infection 12 to 30 months. Immune system monitoring and preventive therapy with antiviral drugs and other medications is now recommended for all HIV-infected persons before they become symptomatic from immunodeficiency. With early preventive therapy there is evidence that both the quality and quantity of life of HIV-infected persons can be significantly enhanced. These new therapeutic approaches require a new emphasis on primary care and outpatient services for HIV-infected persons. The average annual cost of caring for an AIDS patient in a hospital is $38,000.[4] If new AIDS cases in Connecticut are diagnosed during a hospital admission during 1990, the costs for these cases alone will be over $17 million dollars. That does not include hospital costs for the over 500 persons who were previously diagnosed and are living with AIDS. In addition, about 1,750 HIV-infected persons have been identified through Connecticut's voluntary counseling and testing programs. The current cost of AZT is about $4,000/person/year. To treat the 60% of these persons who could benefit from such therapy, the annual cost would be $4.2 million dollars.

To date, less than 15% of persons currently infected with HIV have been diagnosed with AIDS. Yet we know that transmission continues to occur at the rate of 45 children and a minimum of 800 adults each year. If Connecticut continues to contribute 1.2% of cases nationally, and CDC projections are correct, we could expect 750-1,200 new AIDS cases to be diagnosed in 1993 with a cumulative total of 4,700-5,700 cases. Up to 2,700 persons living with AIDS could require health services that year alone. Planning and expanding health-care services for HIV-infected persons will continue to challenge both government and the health-care industry in Connecticut.

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HIV Seroprevalence Among Childbearing Women in Connecticut

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ABSTRACT—A seroprevalence survey of human immunodeficiency virus (HIV) among childbearing women in Connecticut is being conducted as one of the family of HIV seroprevalence surveys funded by the Centers for Disease Control (CDC). Between 1 April 1989 and 30 March 1990 dried blood specimens submitted from all newborns (45,890) for metabolic screening were examined for HIV antibodies by standard laboratory techniques in a blinded manner. The overall HIV prevalence rate was 0.30% (138 newborns). Rates did not differ significantly by mother's age group in the overall population. Rates of seropositivity were higher among blacks (1.2%) and Hispanics (0.69%) than among whites (0.10%). Seropositivity by town was highest in New Haven (1.6%) where one in every 63 residents who gave birth was infected. Based upon this survey, we estimate that 45 HIV-infected children were born in Connecticut during the one-year study period and that approximately 2,300 women of childbearing age are currently infected.

Introduction

EPIDEMIOLOGIC surveillance of human immunodeficiency virus type 1 infection in women of reproductive age is of critical importance for monitoring trends in HIV infection and for program planning. Sexually active women are at risk of exposure to HIV through intravenous (IV) drug use or through heterosexual transmission, particularly as sex partners of IV drug users. Infected women can transmit the infection to their children. In Connecticut women comprise 19% of all adult cases. As of 30 September 1990 a total of 322 Connecticut women with acquired immunodeficiency syndrome (AIDS) had been reported to the Connecticut Department of Health Services. Of these women, 59% used IV drugs, 33% had heterosexual contact with a person infected with HIV or at increased risk of exposure, 5% had other identified exposure factors, and 3% had no identified risk of exposure. Of the 59 pediatric cases of AIDS (patients under 13 years of age at diagnosis), 97% became infected through perinatal exposure. AIDS case surveillance does not necessarily reflect current patterns and trends of HIV infection because of the lengthy incubation period between infection and onset of clinical AIDS (median=11 years). Therefore, obtaining estimates of the prevalence HIV infection among women of reproductive age is important to determine current levels of infection and monitor trends of HIV prevalence over time. Such studies provide a mechanism to detect changes in prevalence and in the dynamics of the epidemic relatively early and provide state and local health departments and health care providers with information to develop and target effective education and prevention materials and services and to plan for health care and social services that will be needed by women and children with HIV infection and AIDS. In 1987-88 the CDC, in collaboration with state and local health departments, developed and implemented the family of HIV seroprevalence surveys. These surveys provide a standardized, comprehensive, national surveillance system for HIV.[1]

Methods

Newborns in the United States are screened for rare but treatable metabolic disorders including phenylketonuria (PKU) and congenital hypothyroidism. Neonatal screening programs are mandated by law in 49 of the 50 states. Because maternal IgG antibodies are transferred to the fetus, these newborn blood specimens can be used to study the prevalence of HIV infection in women giving birth. Ninety-six percent of newborns in Connecticut hospitals are screened for metabolic disorders using dried blood specimens submitted to the Connecticut Department of

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Table 1
Towns and Number of Births* in Areas of Connecticut:
Units of Analysis for Newborn Serosurvey

Area (# of Births)

1 ....(1,420)
Darien
Greenwich
New Canaan
Ridgefield
Wilton
2 ....(1,899)
Bethel
Easton
Fairfield
Monroe
Redding
Trumbull
Weston
Westport
3 ....(1,359)
Bridgewater
Brookfield
Middlebury
New Fairfield
New Milford
Newtown
Sherman
Southbury
Roxbury
Washington
Woodbury
4 ....(1,191)
Bethlehem
Canaan
Colebrook
Cornwall
Goshen
Harwinton
Kent
Litchfield
Morris
North Canaan
Norfolk
Salisbury
Sharon
Thomaston
Torrington
Warren
Winchester
5 ....(1,566)
Barkhamsted
Bloomfield
Canton
East Granby
Granby
Hartland
New Hartford
Simsbury
West Hartford
6 ....(1,621)
Avon
Bristol
Burlington
Farmington
Plymouth
7 ....(1,476)
Cheshire
Prospect
Plainville
Southington
Watertown
Wolcott

Area (# of Births)

8 ....(1,878)
Ansonia
Beacon Falls
Derby
Naugatuck
Oxford
Seymour
Shelton
9 ....(1,353)
Milford
Orange
Stratford
10 ....(1,466)
Branford
East Haven
North Branford
West Haven
11 ....(1,111)
Bethany
Hamden
North Haven
Woodbridge
12 ....(1,996)
Berlin
Meriden
Newington
Wallingford
13 ....(1,854)
East Windsor
Ellington
Enfield
South Windsor
Suffield
Windsor
Windsor Locks
14 ....(1,818)
East Hartford
Manchester
Rocky Hill
Wethersfield
15 ....(1,555)
Cromwell
Durham
Glastonbury
East Hampton
Marlborough
Middlefield
Middletown
Portland
16 ....(1,391)
Chester
Clinton
Deep River
East Haddam
East Lyme
Essex
Guilford
Haddam
Killingworth
Lyme
Madison
Old Lyme
Old Saybrook
Westbrook

Area (# of Births)

17 ....(1,611)
Bozrah
Colchester
Franklin
Lebanon
Montville
Norwich
Preston
Salem
Sprague
Waterford
18 ....(1,590)
Andover
Bolton
Columbia
Coventry
Hebron
Mansfield
Somers
Stafford
Tolland
Union
Vernon
Willington
19 ....(1,633)
Ashford
Brooklyn
Canterbury
Chaplin
Eastford
Griswold
Hampton
Killingly
Lisbon
Plainfield
Pomfret
Putnam
Scotland
Sterling
Thompson
Windham
Woodstock
Voluntown
20 ....(2,321)
Groton
Ledyard
New London
North Stonington
Stonington
21 ....(2,842)
Bridgeport
22 ....(1,074)
Danbury
23 ....(3,050)
Hartford
24 ....(1,216)
New Britain
25 ....(2,166)
New Haven
26 ....(1,239)
Norwalk
27 ....(1,590)
Stamford
28 ....(1,888)
Waterbury

*Births as published in the 1987 Connecticut Registration Report.

Health Services Newborn Screening Laboratory. The use of a central laboratory provides a sample representative of the universe of childbearing women for testing. Using a standard survey protocol the mother's demographic and residential information and hospital geographic location are linked to each specimen tested. Personal identifying information is removed before testing so that serologic test results cannot be linked to any identifiable persons. Because this study uses residual blood collected for other purposes, and because the identities of individuals tested cannot be linked to HIV test results, it fulfills the criteria for a blind survey. Since the survey is blinded, it is exempt from the state law requiring informed consent which is mandated for individualized HIV testing. Blinded surveys eliminate the self-selection bias of voluntary (linked) HIV seroprevalence surveys and provide unbiased estimates of infection among the population surveyed.

Only the first blood specimen submitted for metabolic screening is eligible for inclusion in the survey. The sampling frame includes the universe of all first blood specimens submitted. After completion of metabolic screening procedures, personal identifiers are removed. The specimens and corresponding demographic and geographic data are assigned a random survey number. Information retained for the national survey includes: month and year of the infant's birth; county and state of mother's residence; mother's age group; mother's race and ethnicity; and hospital county. The mother's town of residence and a hospital code are also recorded for local use. Data are entered directly into a microcomputer.

Two 1/4 inch circles per sample are punched into a tray of 96 wells which have been prelabeled with the random survey number. Filter paper specimens are tested in accordance with the CDC protocol utilizing the procedure developed by the Massachusetts Department of Public Health.[2] Enzyme-Linked Immunosorbent Assay (ELISA) testing is performed with a commercial manufactured test kit (Genetic Systems) for IgG antibody to HIV. Repeatedly reactive specimens are confirmed by Western blot using a Miniblotter system. All laboratories involved in the survey participate in the CDC Program for Quality Assurance for HIV Seropositivity of Dried Blood Spots.[3] Test results and demographic information with the corresponding survey number are entered separately into a computerized database in the AIDS Section at the State Health Department. Data files from each state participating in the survey are shared with CDC and merged into a national master file.

Data Analysis

Seroprevalence rates were calculated as the number of positive specimens divided by the number of specimens tested. Rates were calculated by county and by New England County Metropolitan Areas (NECMAs). In order to provide local data, a plan for small area analysis was

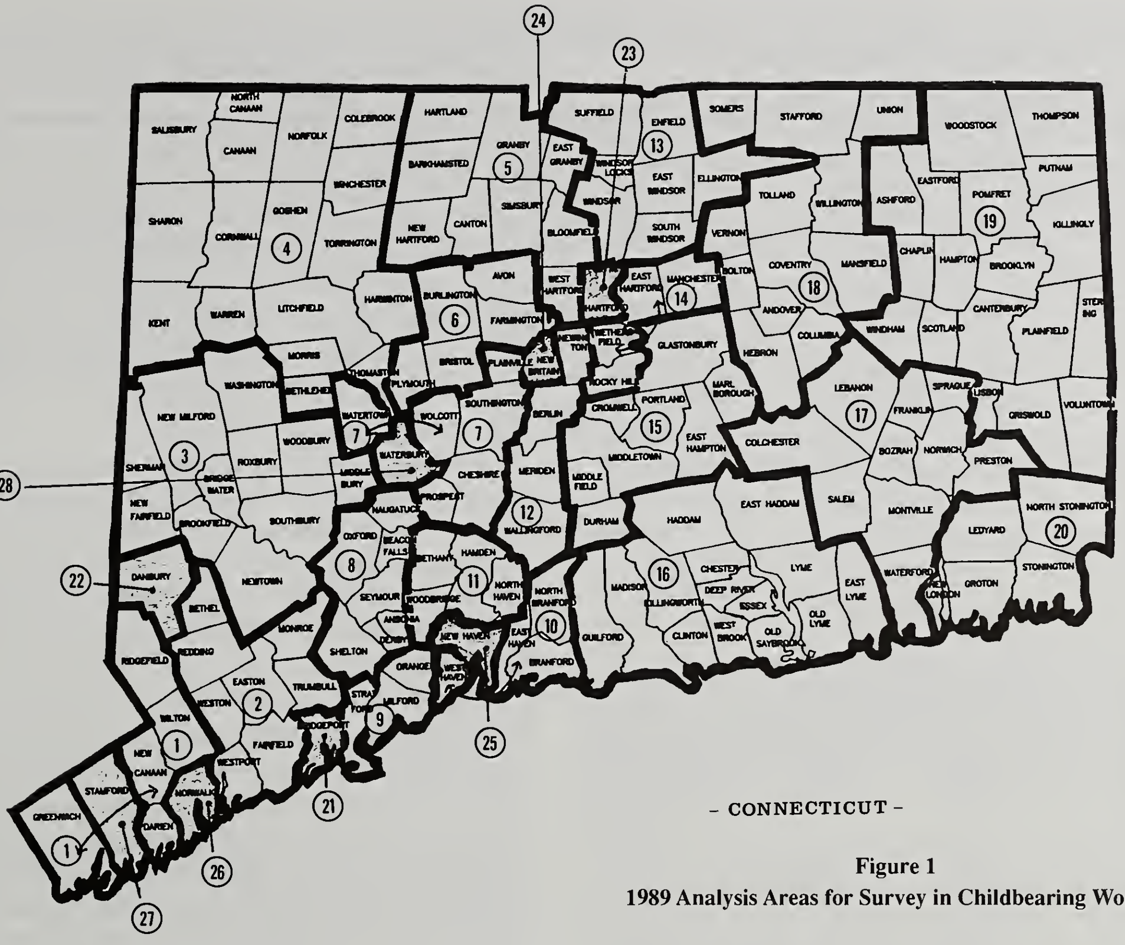

Figure 1
1989 Analysis Areas for Survey in Childbearing Women

developed. The state was divided into 28 areas using the following criteria (Fig. 1 and Table 1): 1) No area has less than 1,000 births in the most recently available Registration Report (1987); 2) towns within existing health districts are not split, but more than one health department or district may be combined to obtain the 1,000 birth minimum; 3) areas are as geographically contiguous as possible. These areas represent the mother's residence and do not reflect where the birth occurred. Analysis of seroprevalence rates for institutions was not done, and should not be inferred from this data. Age- and race-specific rates were calculated for the state as a whole. Eight cities had more than 1,000 births. For these cities race-specific rates were also calculated.

To determine if there was an association between HIV positivity and living in an urban area, rates in urban areas were compared to the overall rate for the state. In addition, the association of seropositivity and race/ethnicity was evaluated for the state as a whole and the eight urban areas. Statistical significance was determined using chi-square testing with Yate's correction and the Fisher exact test.

Results

The first survey year for the survey of childbearing women (SCBW) was 1 April 1989 through 31 March 1990. There were 47,378 first PKU specimens received by the laboratory of which 45,890 were from Connecticut residents. Among the 1,139 out-of-state-residents tested, there were two positive specimens for a seropositivity rate of 0.18%. These were excluded from further analysis. The overall seroprevalence rate for Connecticut women was 0.30% (CI 0.25-0.36%) or one in every 333 births. New Haven County had the highest rates (0.43%) and three counties had no seropositive women (Table 2). Of the 28 smaller geographic areas, 18 had at least one HIV positive woman (Table 3). New Haven (area 25) had the highest rate, 1.6%. Rates in the eight big cities, individually and combined, were substantially higher than in the rest of the state (Table 4). Rates among women from these urban areas were nine times the rate of women from the remainder of the state.

The data collected for mother's race/ethnicity and age group was more than 99% complete during the first survey period. There were seropositive women among all age

Table 2
Seroprevalence of HIV in Women of Childbearing Age by County of Residence, Connecticut Only
April, 1989-March, 1990

County	*HIV+ / Total*	*% Positive*
Fairfield	43/12006	0.36
Hartford	37/11843	0.31
Litchfield	0/2174	0.00
Middlesex	0/1874	0.00
New Haven	50/11513	0.43
New London	6/3573	0.17
Tolland	0/1614	0.00
Windham	2/1275	0.16
Missing	0/9	0.00
Total	138/45890	0.30

Table 3
Survey of Childbearing Women
Children Born to HIV Infected Mothers by Analysis Area
April, 1989 through March, 1990

Analysis Area	*%HIV Positive*	*Mothers Infected*	*Children Born to HIV+ Mothers*
1	0.00	0	0
2	0.12	1 in 833	2
3	0.00	0	0
4	0.00	0	0
5	0.14	1 in 714	2
6	0.00	0	0
7	0.00	0	0
8	0.00	0	0
9	0.08	1 in 1250	1
10	0.18	1 in 555	3
11	0.11	1 in 909	1
12	0.11	1 in 909	2
13	0.00	0	0
14	0.19	1 in 526	3
15	0.00	0	0
16	0.08	1 in 1250	1
17	0.00	0	0
18	0.00	0	0
19	0.13	1 in 769	2
20	0.37	1 in 270	6
21	0.48	1 in 208	14
22	0.27	1 in 370	3
23	0.79	1 in 127	24
24	0.49	1 in 204	6
25	1.59	1 in 63	34
26	1.01	1 in 99	13
27	0.55	1 in 182	10
28	0.30	1 in 333	2
Missing	0.18	1 in 555	2
State of Connecticut	0.30	1 in 333	138

groups except women older than 40 years of age (Table 5). While there was not a statistically significant difference in the overall positivity rate between age groups, rates by race/ethnicity were much higher for black and Hispanic women in the 20-29 and 30-39-year-old age groups than for whites (p=.0026). For white women, rates did not increase with age. However, among Hispanic women there was a two-fold increase in positivity in 20-29 year olds vs those less than 20 years old and a five-fold increase in the 30-39-year-old women. For black women the trend with increasing age was even more dramatic, four-fold for the 20-29-year-old age group and 9-fold for 30-39-year-old women.

Among all women from the eight large urban areas rates were higher than in the rest of the state regardless of race, five times higher for whites, and three times higher for black and Hispanic women. Rates among white women in New Haven, Hartford, and Norwalk were significantly higher than in the rest of the state (Table 5). This was also true for black women in New Haven and Norwalk. Black women were more likely to be positive than white women in New Haven (p=.0009; odds ratio =5.4), Norwalk (p=.001 Fisher's exact), Bridgeport (p=.0116, Fisher's exact) and Stamford (p=.014, Fisher's exact). Hispanic women were more likely to be positive than white women in Bridgeport (p=.006, Fisher's exact). Of particular interest is the fact that this differential risk was not noted for Hartford where rates were similar across all race/ethnicity groups. In general, the rate for black women was 11 times higher than for white women, one in every 83 births vs one in every 1,000. Among Hispanic women the rate was seven times higher than whites, one in every 145 births.

Discussion

In the one-year study of Connecticut births, 138 newborns were found to be HIV seropositive, indicating that 0.30% of women who had live births during that time were infected with HIV. Although HIV infection was demonstrated in almost every area of the state, the highest rates were in New Haven, where newborn serological testing indicated HIV infection in one in every 63 childbearing women (1.6%). Among residents of New Haven and Norwalk about one in every 33 black women who gave birth during the study period was infected with HIV. Areas with high prevalence of HIV-infected childbearing women are largely located in inner-cities where minorities constitute a substantial proportion of the population and where poverty and drug use are serious problems. The higher rate of infection among older minority women may be related to longer exposure to drug use, to older male cohorts with drug experience, or to multiple sexual partners.

Data from the national survey of childbearing women with 31 states reporting indicates that the overall seroposi-

Table 4
Seroprevalence of HIV Antibodies Among Childbearing Women by Town of Residence and Race/Ethnicity
April 1989 through March 1990

Town of Residence	*# Tested (%+)*	*White, Not Hispanic # Tested (%+)*	*Black Not Hispanic # Tested (%+)*	*Hispanic # Tested (%+)*
Bridgeport	2,929 (0.48)	967 (0)	879 (0.68)	911 (0.77)
Danbury	1,121 (0.27)	822 (0.37)	99 (0)	94 (0)
Hartford	3,037 (0.79)	507 (0.60)	1,269 (0.95)	1,145 (0.70)
New Britain	1,236 (0.49)	767 (0.39)	107 (0)	307 (0.98)
New Haven	2,335 (1.6)	820 (0.49)	1,089 (2.6)	321 (1.6)
Norwalk	1,289 (1.0)	888 (0.45)	251 (3.2)	102 (0.98)
Stamford	1,829 (0.55)	1,081 (0.19)	493 (1.2)	189 (0.53)
Waterbury	2,016 (0.30)	1,275 (0.08)	327 (0.56)	322 (0.33)
Total 8 Large Cities	15,791 (0.72)	7,127 (0.28)	4,514 (1.4)	3,391 (0.80)
Rest of CT	30,099 (0.08)	26,894 (0.06)	1,373 (0.51)	845 (0.24)
Connecticut Total	45,890 (0.30)	34,021 (0.10)	5,887 (1.2)	4,236 (0.69)

tivity rate is 0.15% or 1.5/1,000 births.[4] Connecticut is among the six states with the highest reported rates in the country. Only New York, New Jersey, and Florida have reported rates greater than 4/1,000.

New Jersey has reported a statewide prevalence of 4.9/1,000 in 1988 and 5.2/1,000 in 1989,[6] while Florida has a prevalence rate of 4.9/1,000.[7] Connecticut, Massachusetts, and Maryland have rates between 2.0 - 3.9/1,000.[4]

During the two years that New York state has conducted its survey, the seropositivity rate has remained stable at 6.5/1,000 births.[5] The rate in New York City is 12.3/1,000 vs the rest of the state which is similar to national findings (1.6/1,000). As in Connecticut, black and Hispanic women are more than eleven times more likely to be HIV positive than white women, regardless of residence.

Data from this survey can be used to estimate the number of HIV infected women and to project the number of perinatally infected children who will develop AIDS.[8] In 1988 there were 770,770 women in Connecticut 15-44 years of age. If the overall seroprevalence rate from the SCBW is applied to this population base, we would estimate that 2,312 women of childbearing age are currently infected. This estimate is remarkably compatible with a simple estimate based on the 8:1 ratio of HIV infected persons to reported cases (2,576). Specific estimates of the number of white, black, and Hispanic women infected can be obtained by applying age and race specific rates to 1980 census age/race/sex specific population estimates. Using this method an estimate of 1,605 is obtained, with 609 white women (38%), 648 black women (40%), 262 Hispanic women (16%), and 50 women of other race ethnicity (3%) being infected. While the overall population has not increased significantly since 1980, the relative proportion of blacks and Hispanics in the state has increased. Therefore, this lower figure underestimates HIV prevalence in women.

The accuracy of these estimates is at best uncertain. Compared with all women of reproductive age, childbearing women are generally from households with lower incomes and include a higher proportion of residents of urban areas and women from minority groups. Therefore, unadjusted crude seroprevalence rates may overestimate the rate in women of reproductive age. Alternatively, since the subgroup of women delivering live children is, on the average, younger than women of reproductive age, it could underestimate HIV prevalence, if prevalence in women increases with age as had been noted in other studies and among minority women in this survey. This would also be true if HIV infection adversely affects pregnancy outcome or if HIV-infected women selectively avoid or terminate pregnancy.

Rates from this survey can also be used to estimate the incidence of infection in infants during the survey period. The following assumptions are made: 1) there were 50,000 births in Connecticut during the survey year, 2) the estimate of prevalence among childbearing women is 3.0/1,000, 3) the probability of transmission of HIV to the infant is 30%, and 4) the probability of developing AIDS by 12 months of age is 20%. On the basis of these assumptions we estimate that 150 newborns were delivered by infected mothers, that 45 of these children were infected with HIV, and that nine of them will develop AIDS within one year of birth. Should suitable diagnostic tests become available 45 children per year would require services and treatments to prevent progression to disease.

Table 5
Age and Race/Ethnic Group Specific Rates for HIV in Women of Childbearing Age in Connecticut
(April 1989 to March 1990)
Race/Ethnicity (%)

Age group	*White*	*Black*	*Hispanic*	*Other*	*Total*
Under 20	0.13	0.26	0.29	0.00	0.21
20-29	0.12	1.1	0.66	0.43	0.32
30-39	0.09	2.4	1.6	0.17	0.30
40-49	0.00	0.00	0.00	0.00	0.00
50 & over	0.00	0.00	0.00	0.00	0.00
Total	0.10	1.2	0.68	0.23	0.30

Chi-square test of trend p=0.0026

Medical encounters provide opportunities to reach women at potential risk of HIV infection. Clinics providing women's reproductive health services and individual health care providers can use seroprevalence data to determine the need for additional HIV prevention activities in their clinical settings. At this time the most effective means of preventing maternal transmission of HIV is early detection and counseling of HIV positive women. All women of childbearing age should receive clear and accurate information as early in their reproductive life as possible concerning the risk factors for HIV infection. The standard of practice in caring for all women should include: 1) personal HIV/STD risk behavior assessment at *each* clinical visit for reproductive health or STD services, 2) universal education about the virus and its transmission, 3) risk reduction counseling on drug use and sexual behavior, and 4) the offer of a voluntary confidential HIV test to all pregnant women and women contemplating pregnancy.[11,12,13]

As the HIV epidemic has progressed in Connecticut, women and children are increasingly affected. The implications of data from the serosurvey of childbearing women warrant immediate attention by all practitioners.

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Evaluation of the Effect of School-Based Education on Adolescents' AIDS Knowledge and Attitudes

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ABSTRACT—To measure the effect of school-based education on adolescents' AIDS knowledge and attitudes, we conducted surveys in two high schools and compared them to a baseline survey conducted in the same schools the previous year. One month before the follow-up survey, students in one of the two schools (the intervention school) had received a two-day education program about AIDS; students in the other (control) school had received no specific AIDS education. Students in both schools showed increases in AIDS knowledge between the baseline and follow-up surveys. Students in the intervention school were more likely than students in the control school to answer questions correctly about the safety of blood donation (82% vs 73%) and the possibility of HIV transmission from a former intravenous drug user (85% vs 67%); they were also less likely than students in the control school to believe persons with AIDS should have certain restriction on their activities. We conclude that while students' level of knowledge about AIDS and HIV has been improving over time even without intervention, specific education programs can still transmit important information, including information that is necessary to prevent or change risky behaviors.

Introduction

CURRENTLY the only method of preventing community spread of infection with the human immunodeficiency virus (HIV) is education of persons at risk. Adolescents are a logical target group for education about HIV and the acquired immunodeficiency syndrome (AIDS) since they are relatively easily reached in schools and they are at an age during which risky behaviors are likely to begin. Surveys have shown deficiencies in adolescents' AIDS knowledge, especially with regard to the prevention of sexual transmission and to certain nonrisk factors such as blood donation.[1-6] In an attempt to address these deficiencies and prevent risky behavior, physicians and public health officials have called for routine school-based education of children and adolescents about AIDS and HIV.[7-10] However, in spite of the widespread implementation of these education programs,[11] there are few published evaluations of their effectiveness.[12-13]

An AIDS knowledge and attitude survey carried out previously in Connecticut high schools demonstrated a desire for more information about AIDS[4]. In response to this survey the Connecticut Department of Health Services (CDHS) was asked by town officials to provide education in two high schools that had participated in the initial survey. We took the opportunity of this request to assess the effect of structured school-based education on AIDS knowledge and attitudes in this town.

Methods

Stratford, Connecticut, is a town of approximately 50,000 people, with a small racial minority population (6% black, 2% Hispanic) and a median household income of $23,835 (1890 U.S. Census). In June 1986, as a part of a baseline evaluation of AIDS knowledge and attitudes, a sample of 141 11th- and 12th-grade students attending randomly-selected English classes in the only two public

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Table 1
Demographic characteristics of students completing AIDS questionnaires, Stratford, CT

Characteristic	Baseline	Follow-up	
		Control	Intervention
	N=141	N=234	N=186
Age (mean)	16.6	17.5	16.7
Male (%)	56	43	47
Black (%)	8	1	17

high schools in Stratford were surveyed anonymously using self-administered questionnaires.

In cooperation with the Stratford School District, the CDHS returned to the schools the following year to carry out an education program and an evaluation of that program. During the intervening time, AIDS education had not been part of the regular curriculum at either of the two schools. One high school served as an intervention school and the other served as a control school. On 30 April 1987 students at the intervention school assembled for a 45-minute presentation on AIDS. This presentation included an 18-minute videotape,[14] an 15-minute lecture, and a short question-and-answer session. The program emphasized information on 1) sexual and blood-borne transmission of HIV, 2) lack of transmission by casual contact or insects, and 3) the preventive value of avoiding drugs and of sexual abstinence or condom use. To a lesser extent information was also presented on specific risk groups for AIDS, the spectrum of HIV infection, and the mechanism by which HIV infection leads to AIDS. On 11 May the education program was continued in small-group discussions led by Stratford School District teachers and physicians from the county medical association. These discussion leaders had themselves received training from CDHS.

On 18 May, 18 days after the assembly and seven days after the group discussions in the intervention school, 12th-grade students at both schools completed a follow-up survey. Survey questionnaires were administered on a single day to all 12th- grade students attending classes in English, a required class given daily at both schools. The survey contained 50 questions which used the same wording as the baseline survey and concerned: modes of transmission of HIV, risk groups for AIDS, treatability of AIDS, attitudes about persons with AIDS and HIV infection, and sources of information about AIDS. Approximately 30% of the students completing questionnaires had also taken part in the original study. Ten days after completion of the second survey, students at the control school attended an AIDS education program by CDHS.

To evaluate factual questions on the questionnaire, we interpreted responses of "don't know" or questions left blank as incorrect. To evaluate questions on attitudes, we excluded responses of "don't know" or questions left blank from the analysis. The statistical significance of differences in responses to individual questions was evaluated using chi-square tests or Fischer exact tests if the expected value in a cell was <5.

Results

One hundred eighty-six (78%) of 239 12th-grade students enrolled at the intervention school and 234 (87%) of 269 enrolled at the control school completed and returned questionnaires. The demographic characteristics of students completing the survey in the two schools are presented in Table 1. Students in the intervention school were younger and more likely to be black than students in the control school. One hundred seventy-two (92%) students at the intervention school reported that they had attended at least one of the AIDS education sessions; 130 (70%) had attended both the assembly and the group discussions.

Table 2 summarizes data on the percentage of students answering AIDS knowledge questions correctly in both schools in the follow-up survey and the survey one-year earlier. Students in the follow-up survey demonstrated large improvements compared to the students in the baseline survey in recognition of modes of transmission,

Table 2
Percent of students answering AIDS knowledge questions correctly, Stratford, CT

		Baseline	Follow-up	
	Correct		Control	Intervention†
Subject of Question	Response	N=141	N=234	N=186
Modes of Transmission				
Needle sharing	Yes	86	97 *	100
Sexual contact	Yes	94	99 *	98
Blood donation	No	49	73 *	82 **
Shaking hands	No	76	94 *	95
Mosquito bite	No	48	53	79 **
Risk Groups				
Male homosexuals	Yes	97	98	100
Intravenous drug users (IVDU)	Yes	57	82 *	94 **
Infants of mothers with AIDS	Yes	86	88	96 **
Prostitutes	Yes	91	98 *	97
Female homosexuals (Lesbians)	No	17	28 *	38 **
Asymptomatic carrier state	Yes	48	74	82
Sexual transmission from IVDU	Yes	42	67	85 **

*$p<.05$, control school vs. baseline survey
**$p<.05$, intervention school vs. control school
†$p<.05$ for all items, intervention school vs. baseline survey

risk groups, and the asymptomatic carrier state. Students in the intervention school, however, were significantly more knowledgeable than students in the control school. In particular, students in the intervention school were more likely to recognize the potential of transmission from a former intravenous drug user (IVDU) (85% vs 67%) and the safety of blood donation (82% vs 73%) and insect bites (79% vs 53%). There were no important differences by age or sex in AIDS knowledge in either the intervention or the control school. In the intervention school, white students were more likely than black students to answer questions correctly about the potential of sexual transmission from a former intravenous drug user (86% vs 76%, p=.17) or the safety of blood donation (89% vs 62%, p=.001) or insect bites (82% vs 66%, p=.09). There were not enough black students in the control school to assess racial differences there.

Control students and intervention students differed in their self-reported most important source of information about AIDS. Sixty percent of control students listed various media (radio, television, periodicals) as their most important source, as compared to only 40% of intervention students (p<.0001). The education program given by CDHS was not listed among the choices of source of information; however, students in the intervention school were twice as likely as students in the control school to list teachers or medical persons (19% vs 10%) or to list an unspecified "other" source (27% vs 14%).

Students' attitudes about persons with AIDS are presented in Table 3. Students in the follow-up survey, compared to students in the baseline survey, tended to believe persons with AIDS should have fewer restrictions on their activities. Students in the intervention school believed in fewer restrictions than those in the control school, although these differences were small. Only a small percentage of students in all groups felt that persons with AIDS should be allowed to work with food in restaurants. Students in both schools in the follow-up survey who correctly answered question about the lack of transmission through shaking hands and insect bites were more likely than their classmates to feel that a person with AIDS should be allowed to live in apartment buildings (89% vs 80%, p=.03), go to public school (71% vs 54%, p<.01), or be public school teachers (66% vs 46%, p<.001), and were far less likely to think that persons with AIDS should be quarantined (12% vs 28%, p<.001).

Discussion

In this study we found that students who had received education were more knowledgeable about AIDS than were their peers who had not. This difference could have been due to underlying differences in the two school populations, or it could have been due to the education itself. Since the data in the baseline survey were pooled, we were unable to compare knowledge differences between the two schools at baseline. However, to the extent that we were able to measure underlying differences between the school populations, we found no evidence that these differences could explain the knowledge discrepancy. The primary demographic differences between the schools were race and age. Black students (whom we found to be less knowledgeable about AIDS than white students) represented a larger proportion of the intervention group than the control group, so this racial difference would have the effect of masking an effect of the intervention rather than creating a spurious effect. Students in the intervention school were also slightly younger than students in the control school. However, neither the baseline survey nor the follow-up survey found a relationship between age and AIDS knowledge; if there were such a relationship, one would expect that older students would be more knowledgeable, and this again would tend to mask the intervention effect. We believe the knowledge difference was most likely to be due to the education itself, a conclusion which is consistent with the findings of others evaluating high school AIDS education programs.[12,13]

Table 3
Percent of students responding "yes" to AIDS attitude questions, Stratford, CT

	Baseline	Follow-up	
		Control	Intervention
Question	N=141	N=234	N=186
People with AIDS should be allowed to:			
Live in apartment buildings	75	83	89
Attend public school	41	60 *	70
Work with food in restaurants	8	13	16
Be public school teachers	33	52 **	66 **
People with AIDS should:			
Remain unknown to others	19	25	27
Be permanently separated (quarantined)	32	30	22

*p<.05, control school vs. baseline survey
**p<.05, intervention school vs. control school

The most important areas of improvement in the intervention school were knowledge about the safety of blood donation and knowledge about the potential for transmission of HIV from former intravenous drug users. Information about the safety of blood donation was greater among students in the intervention school than among students in the control school or among students in any of 42 states and cities participating in a multisite survey in 1989;[6] knowledge of this is crucial to the maintenance of an adequate blood supply. An understanding of the potential of sexual transmission of HIV from a former IVDU requires a fairly complete knowledge of both the natural history of HIV infection and the means of spread. It is perhaps this mode of transmission that is the most likely to cause infection in females in these schools. The surveys indicated that students in the control school obtained most of their information about AIDS from the media. Thus students learned from the education program facts about HIV transmission that were extremely important, and that were apparently not adequately imparted to them through the media.

We found the improvement in knowledge and education against a background of changing AIDS knowledge over time. The temporal trend seen in our survey is consistent with improvements that can be seen over time by comparing surveys carried out in different sites since 1984.[1-6] In our study, students in the control school were more likely to answer correctly the questions in Table 2 than any group of students in published surveys carried out between 1984 and 1986,[1-3] and were similar in their responses to students surveyed in 1988 and 1989.[5,6] A change over time is not surprising since students in this survey received their information about AIDS primarily from the media, and media attention to AIDS has changed over time.[15] The dependence of adolescents' AIDS knowledge on the media has been found by others[1] and provides further justification for school-based education, as there is no guarantee that previous attention to the AIDS epidemic by the media will be sustained in the future.

There were few black students who participated in our survey. However, our finding that black students had less knowledge than white students about modes of HIV transmission is consistent with the findings of a survey in San Francisco.[16] AIDS education programs should make particular efforts to reach children in minority groups.

In this study, students in the follow-up survey showed a greater flexibility in their attitudes towards persons with AIDS or HIV infection than students in the baseline survey, and those students who received AIDS education were somewhat more flexible in their attitudes than those who did not. This suggests that there is benefit in education of those who are at low risk of HIV infection, as their knowledge permits them to make more informed decisions as citizens about AIDS policy.

It is always difficult to establish a link between knowledge and behavior, especially in adolescence. In this study we were unable to measure behavior. A review of the effectiveness of sex education in schools concluded that short-term educational programs have very little influence on sexual behavior.[17] Therefore it is far from certain that an intervention program such as this, while successful, will have an impact on AIDS prevention. However, knowledge about AIDS and HIV is necessary in the process of changing risk behavior even if it does not by itself cause those changes. We feel strongly that AIDS education should be part of the curriculum in all schools. Further studies are needed to determine how best to use the knowledge gained through education to influence risk-taking behavior.

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AIDS Knowledge, Attitudes, and Behavior in Connecticut: An Overview of 1986-89 Surveys

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Introduction

ACQUIRED immune deficiency syndrome (AIDS) has emerged from the 1980s as a dominant public health concern. Although the underlying pathogen, human immunodeficiency virus (HIV), has been identified and is quickly becoming one of the most thoroughly studied organisms in history, no cure for AIDS or vaccine appears imminent.[1] It is estimated that as many as one million people in the United States are infected with the virus, with 116,000 reported by the end of 1989 to have developed AIDS.[2,3] Given that the virus is transmitted primarily via sexual intercourse, sharing of needles, and from mother to child, it has generally become accepted that the most hopeful avenue for interrupting the chain of infection in the near future is behavior modification.[4-6] To that end, numerous programs have been instituted on federal, state, and local levels the goals of which include increasing public awareness of AIDS, its modes of transmission, and methods by which individuals can protect themselves from infection. It is the premise of these programs that increased knowledge about AIDS will assist individuals to make informed decisions about their personal susceptibility, dispel misconceptions about AIDS thereby reducing the discrimination directed towards persons with AIDS, and enable citizens to participate more fully in the many aspects of the public policy debate now surrounding the issue.

Connecticut ranks 10th among the states in annual incidence of reported AIDS cases with 13.3 per 100,000 in 1989.[7] Of these 40% have been homosexual/bisexual, 39% have been intravenous drug users (IVDU), 6% have been both, 9% have been heterosexual cases, and 6% have been others including hemophiliacs, transfusion cases, and undetermined. Furthermore, while 7% of the population is black and 4% is Hispanic, 38% of AIDS cases have been black and 17% have been Hispanic. Among white AIDS cases in Connecticut, 64% have been homosexual/bisexual and 16% have been IVDU. Among black AIDS cases 18% have been homosexual/bisexual and 55% have been IVDU, while among Hispanics 18% have been homosexual/bisexual and 57% have been IVDU. Connecticut's profile differs substantively from the national picture in that the fraction of cases due to IVDU is approximately double the national figure and is increasing. As of March 1990, 56% of Connecticut AIDS cases reported in 1990 are IVDU-related with only 21% among homosexual/bisexual men. Although the majority of AIDS cases in Connecticut have been males (80%), the trend to IVDU-related AIDS has resulted in a steady increase in the proportion of AIDS cases among women from 12% in 1984 to 20% in 1989. It is estimated that 12,000 Connecticut residents may be infected with HIV and by the end of 1992 there will have been some 3,600 cases in Connecticut and 300,000 nationwide.[7] Enormous costs are represented by these numbers both in terms of the range of consequences to the infected individual and the cost society bears in lost productivity and strain on the health care delivery system. At present the life-time cost of medical treatment of an AIDS patient is estimated to range from $60,000 to $90,000.[8]

In light of the ominous nature of this epidemic, Connecticut state and local governments have mounted a considerable response with the twin goals of preventing the spread of the virus and caring for those infected with HIV. Although a full description of all the programs that have been set in motion specifically because of AIDS is beyond the scope of this paper, in broad outline they include surveillance, health education and risk reduction, counseling and testing, and assessment of health services.

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Educational measures have received particular emphasis with 58% of the $4.5 million allocated to the AIDS section of the Connecticut Department of Health Services in 1988 budgeted for that purpose.

Central to the planning of AIDS educational programs are preliminary measurements of baseline knowledge levels. These data in combination with AIDS surveillance information contribute to the detection of potential problem areas, the fashioning of appropriate messages, and the focusing of scarce resources where they will have the greatest potential for influencing vulnerable populations. Subsequent to an educational process, additional surveys are needed to judge the effectiveness of the program. This may be accomplished on several levels. First, it must be determined that knowledge about the disease is being successfully transmitted to the target population; second, it must be shown that possession of that knowledge results in a change of behavior or a moderation of the irrational fear of AIDS; and third, the change in behavior should be of sufficient magnitude to reduce the incidence of HIV infection. Given the emotionally charged nature of many of the particulars that must be included in this process, making an accurate determination of AIDS education effectiveness has proven to be difficult where it has been attempted. The purpose of this article is to review the Connecticut effort to evaluate the AIDS knowledge level, AIDS-related attitudes, and the prevalence of risk behaviors in Connecticut residents.

Methodology

An attempt was made to identify all major surveys of AIDS knowledge, attitudes, and behavior (KAB) that have been conducted in Connecticut. In addition to obtaining reports on all studies commissioned by the Connecticut Department of Health Services (DHS), both Yale University and the University of Connecticut were contacted. Together 17 surveys (Table 1) were identified and reports of results were obtained.[9-25] The surveys were conducted between the years 1986 and 1989. Thirteen of the surveys were commissioned by DHS (#1-10, 12-14) and one by the federal government (#11). Subsequent to the analysis of these surveys, four more have become available.[26-29]

The reports were reviewed and a summary questionnaire was assembled using questions from the various survey instruments. Responses to these questions were then abstracted from each study into a data spread sheet for analysis. Given the involvement of DHS personnel in the development of most of the surveys, a number of core questions were identified with similar wording and which addressed the major AIDS issues of interest. These questions were grouped according to the following categories: a) knowledge of the healthy carrier state and transmission of HIV, b) knowledge of high risk behaviors, c) knowledge of preventive measures, d) misconceptions about transmission, e) attitudes towards selected public policy issues, f) personal concerns and experiences with AIDS, g) knowledge of and experience with HIV testing, h) knowledge and use of condoms among homosexuals, i) condom use and numbers of sexual partners in the general population, j) risk behavior, k) risk behavior in IV drug users, and l) sources of information about AIDS. Finally, tables were made for each category of questions summarizing the responses of each survey group.

Because survey methodologies and groups studied were often different or occurred in different years, no attempt was made to combine results from different studies. There were some differences between studies in how questions were worded; however, those questions selected for use here were largely unambiguous. In constructing the tables some questions were modified to conserve space without changing the original intent of the questions. Some variability was also present in the form of the responses. For example, affirmative answers included "yes," "very likely," "somewhat likely," "possibly," "definitely," "probably," "high," or "might." In order to achieve uniformity of presentation between surveys, data are presented here as "percent saying yes," "percent responding correctly," or "percent responding affirmatively." Probability values for the observed distribution of responses between subgroups in a single survey were included in the tables when they had been presented in the individual reports. As shown in Table 1, each survey is numbered and that number accompanies that survey in the tables that follow. As shown in Table 2, the survey names have been abbreviated in order to conserve space and generally denote the group surveyed.

Individual survey methods. Each survey employed questionnaires administered to individuals within the study populations either by telephone, by personal interview, or by self-administration. A brief overview of methods and populations studied for each survey follows in the order in which the surveys are presented in the tables.

The "gay men" survey (#1) consisted of two populations, the first, a convenience sample of gay men associated with Connecticut universities and the second, clients of the Hartford Gay and Lesbian Health Collective. With minor differences these two samples received the same questionnaire. Because it was considered that the majority of respondents in this study were relatively open concerning their sexual orientation, a second study, "hard-to-reach white gay men" (#2), was undertaken in which participants were approached individually in areas believed to be frequented by gay men. It was the presumption of this survey that the respondents would be less inclined to disclose their sexual orientation. The third study, of "black

Table 1
Surveys of AIDS knowledge attitudes and behavior (KAB) (Connecticut, 1986-1989)

No.	*Survey Title*	*Date*	*Survey instrument/ Sample selection*
1.	Survey: knowledge, attitudes, and behavior of homosexual men	1988	Self-admin questionnaire/ Convenience
2.	AIDS-related knowledge, attitudes, and behavior of hard-to-reach white gay and bisexual men in Connecticut	1989	Self-admin questionnaire/ Convenience
3.	AIDS-related knowledge, attitudes, and behavior of black gay and bisexual men in Connecticut	1989	Self-admin questionnaire/ Convenience
4.	AIDS-related knowledge, attitudes, and behavior of Hispanic gay and bisexual men in Connecticut	1989	Self-admin questionnaire/ Convenience
5.	CADAC street-wise survey report	1989	Self-admin questionnaire/ Convenience
6.	Trends in HIV seroprevalence and risk behavior among drug treatment program entrants	1986-88	Interview-questionnaire Cohort
7.	AIDS: knowledge, attitudes, and behavior in an ethnically mixed urban neighborhood	1988	Interview-questionnaire/ Cluster
8.	AIDS: knowledge, attitudes, and behavior in Hartford's neighborhoods	1989	Interview-questionnaire/ Cluster
9.	A study of minority individual's attitudes, behaviors, and knowledge of AIDS	1989	Self-admin questionnaire/ Multiple convenience
10.	AIDS knowledge, attitudes, and behavior	1989	Telephone-questionnaire/ Random
11.	Behavioral risk factor survey results	1988	Telephone-questionnaire/ Random
12.	Survey of knowledge and degree of concern about AIDS prevention in New Haven	1987	Self-admin questionnaire/ multiple convenience
13.	Acquired immunodeficiency syndrome and secondary school students: their knowledge is limited and they want to know more	1986	Self-admin questionnaire/ Systematic random
14.	Changes in adolescent's AIDS knowledge: effects of time and education	1987	Self-admin questionnaire/ Systematic random
15.	AIDS: policies for the school setting	1987	Telephone-questionnaire/ Random
16.	Survey of health care worker's knowledge about AIDS and their attitudes towards AIDS patient	1987	Self-admin questionnaire/ Convenience
17.	AIDS education: measurement of Yale-New Haven employee's current attitudes, knowledge and beliefs	1988	Self-admin questionnaire/ Convenience

gay and bisexual men" (#3), and the fourth, of "Hispanic gay and bisexual men" (#4), were completed through the cooperation of subcontractors who made contacts with the appropriate individuals. With minor differences, these three latter surveys were conducted using the same questionnaire. The difficulty in surveying this population was exemplified by the low number of respondents and the inability to determine response rate.

Given the prevalence of HIV infection among IVDU, two surveys were conducted in that group. The "entrants" (#6) population consisted of a cohort of persons who had elected to enter four drug treatment programs for opiate addiction in six cities, while the CADAC "street-wise IVDU" study (#5) attempted to reach active IVDU. The latter survey was conducted through the cooperation of the AIDS Risk Reduction Outreach Workers program. The questionnaires used in both surveys focused on AIDS issues and risk behavior relating to virus transmission, needle sharing, and sexual behavior.

The "neighborhood" studies (#7, #8) were undertaken in areas of Hartford known to have significant minority populations. It was the goal of these studies to sample randomly an urban population using in-person interviews and an extensive questionnaire. Subjects were chosen using a cluster sampling approach. The Asylum Hill survey restricted subjects to those between 18 and 55 years of age while the other neighborhood study limited subjects to those over 18 years. The questionnaires for both surveys were similar, developed by members of the AIDS Community Research Group in conjunction with the DHS.

The "urban adults" study (#9) was conducted by the local health department in each of the following seven cities in Connecticut: Bridgeport (n=280), Waterbury (n=267), Stamford (n=203), Norwalk (n=140), New London (n=115), Greenwich (n=46) and Hartford (n=23). This was an extension of the New Haven adults study (#12) and used a multiple convenience-sample approach in each city. Respondents were recruited from various groups such as WIC programs, street people, Project Fire (a drug treatment program for recently released inmates), Bridgeport University students, STD (sexually transmitted diseases) clinic, Planned Parenthood, soup kitchen clients, and fire department employees among others. Data presented in the report were stratified by gender, city, race, and whether "HIV tested" (n=157), "read an AIDS pamphlet" (n=769), and "greater than four sex partners in the previous year" (n=56).

The "statewide" survey (#10) was commissioned by the DHS to provide estimates of various AIDS-related parameters of young adults (18-49 years). This study was

Table 2
Demographic characteristics of respondents in Connecticut surveys of AIDS KAB (1986-89)

No.	Shorthand title	n(%)	% male	Race/ethnicity (%)				Age (Mean)	Education % HS (college) grad
				W	B	H	O		
1.	Gay men	73/64(?)[a]	100	83/91	6/6	6/2	3/2	-/-	99 (40)/98 (79)
2.	Hard-to-reach white men	260(?)	100	100	-	-	-	34.9	99(47)
3.	Black gay and bisexual men	86(?)	100	-	100	-	-	32.5	97(46)
4.	Hispanic gay and bisexual men	85(?)	100	-	-	100	-	25.2	89(16)
5.	Streetwise IVDU	418(?)	68	14	55	25	5	31.6	-
6.	IVDU treatment entrants	614(65)	67	71	15	13	0	33.0	66(3)
7.	Hartford neighborhood (Asylum Hill)	290(98)	52	25	35	40	-	34, 30, 31[b]	86(53), 84(13), 41(3)[b]
8.	Hartford neighborhoods (Frog Hollow, Upper Albany, South End)	416(84)	42	25	37	38	-	31, 31, 30[b]	73(42), 68(22), 25 (5)[b]
9.	Urban adults	1074(93)	30	54	30	14	3	27.0	-
10.	Statewide adults	918(75)	51	76	13	16	-	33.5	92
11.	Risk behavior survey	1168(?)	42	89	6	3	1	44.6	84(27)
12.	New Haven adults	539(66)	37	49	41	8	2	31.6	-
13.	High school students (1986)	657(99)	49	46	27	21	6	-	0
14.	High school students (1987)								
	Control school	234(87)	43	99	<1	-	-	17.5	0
	Interventions school	186(78)	47	83	17	-	-	16.7	0
15.	AIDS: policies for the school setting	182(46)	65	-	-	-	-	44.8	90(44)
16.	Bridgeport hospital employees	222(?)	20	80	7	9	4	35.7	91(49)
17.	YNHH employees	341(?)	28	75	15	2	1	39.4	96(47)

[a] This study reported the results of two populations (see methods).
[b] White, Black, Hispanic

intended to determine baseline knowledge levels of AIDS in this subpopulation statewide. A random-digit-dial sampling technique was employed to interview a statewide sample. Also incorporated in the survey was a sampling of "inner-city" blacks living in census tracts known to be prominently black (n=117). An additional sampling of Hispanics was based on Connecticut telephone subscribers with Hispanic surnames (n=105). This survey contained several useful stratifications of the results including by gender, race, age, and years of education. Of particular note was the inclusion of selected questions with the same wording as those used in a 1988 National Health Interview Survey.[30] The results of the latter survey are denoted as "USA" in the tables. The NHIS survey results are not necessarily directly comparable to the statewide results for a variety of reasons.

The "risk behavior survey" (#11) was derived from a larger set of life-style question asked as part of a nationally standardized survey relating to injury and chronic disease prevention. Few questions directly relating to AIDS were asked. Responses were stratified by gender, age, income, education, and race. Because the number of black and Hispanic respondents was low, the results of that particular stratification will not be discussed.

Two surveys in consecutive years were conducted by DHS personnel with the intent of determining the level of AIDS knowledge and attitudes among high school students (#13, #14). Potentially sensitive questions regarding personal behavior and knowledge of preventive measures were not asked. The first "high school" survey was conducted using students from 8th and 11th grades at Bridgeport and Stratford public high schools. The second study was conducted using 12th grade students from two Stratford public schools. The students from one school received a 45 minute AIDS education program (intervention school). The students in the other (control) school did not until after the survey was completed.

The remaining four surveys (#12, #15, #16, and #17) were undertaken by students in the Yale University Masters of Public Health program with advice and assistance from Yale faculty members and/or Connecticut Department of Health Services personnel. The "New Haven adults study" (#12) respondents included employees at two local industrial plants (n=228), students at a community college (n=89), clients of a city agency (n=59), as well as clients of family planning clinics (n=158). The "AIDS school policy" survey (#15) had the specific goal of assessing a local area's attitudes towards AIDS as part of a school policy development process. Forty-two percent of the subjects were New Haven residents with the remainder scattered among the surrounding towns. Two studies (#16, #17) focused on health care workers, "Yale-New Haven

Hospital employees," and "Bridgeport Hospital employees." The Bridgeport Hospital employees study chose subjects from staff having direct or indirect contact with patients with AIDS. The Yale-New Haven Hospital survey was carried out subsequent to an AIDS education program and made some comparisons between those people who had attended the seminar and those who had not.

Results

Demographic information. Table 1 lists 17 surveys conducted in Connecticut between 1986 and 1989 as well as the type of survey instrument used and the method by which the sample was selected. The groups surveyed varied widely, ranging from those who were behaviorally at risk for HIV infection (gay men, IV drug users) to groups demographically most likely to encounter HIV (urban adults, health care workers), to groups representative of the general population (students, statewide adults available by telephone). The most common survey method was the self-administered questionnaire, but methods also included telephone interviews and in-person interviews.

Various demographic data for each study are shown in Table 2. Included are the number of respondents and the percent of those contacted who agreed to participate. Not all studies reported a response rate, in part because the study design of certain surveys included word-of-mouth recruitment of respondents (surveys #1-4). The race/ethnicity and gender mix of respondents in the various studies varied depending on the group surveyed. There was also a wide difference in educational level between surveyed groups. In general, the gay respondents were well educated, especially so for the white and black samples with almost 100% being high school graduates and almost half having received four-year college degrees. The neighborhood respondents were less well educated on the whole with Hispanics faring the poorest, less than half having completed high school. Respondents in the health care workers survey had educational levels comparable to the

Table 3
Knowledge of HIV transmission and the healthy carrier state, Connecticut AIDS KAB surveys (1986-89)

No. Survey (% ans cor)	*Possible to be HIV+ and look healthy*	*HIV positive person is infectious*	*IVDU mothers can transmit HIV to their babies*	*IVDU fathers can transmit HIV to their babies*	*Can get AIDS by having sex with healthy IVDU*	*Can get AIDS by having sex with former IVDU*
1. Gay men	93/97				92/89	89/87
2. Hard-to-reach white gay men	97	89				90
3. Black gay and bisexual men	95	95				95
4. Hispanic gay and bisexual men	88	86				75
5. Streetwise IVDU	80					
7. Hartford neighborhood (Asylum Hill)	(% saying "don't know")					
White	15 ($p<0.06$)	18 ($p<0.0009$)	94	88		
Black	17	35	93	93		
Hispanic	31	46	73	73		
8. Hartford neighborhoods (Frog Hollow, Upper Albany, South End)	(% saying "don't know")					
White	13 ($p<0.0001$")	8 ($p<0.0001$)	99 ($p<0.02$)	80 ($p<0.0002$)	99 ($p<0.0001$)	92 ($p<0.002$)
Black	10	16	97	95	97	86
Hispanic	36	31	90	93	88	75
9. Urban adults						
White	77 ($p<0.001$)		89 ($p<0.001$)	79	90 ($p<0.001$)	85 ($p<0.001$)
Black	54		89	76	84	72
Hispanic	43		77	73	78	56
Other	59		79	66	93	70
10. Statewide adults						
White	74	68				
Black	57	68				
Hispanic	57	60				
USA	82	71				
12. New Haven adults	67		70	63	73	61
13. High school students (1986)	48		41		37	
14. High school students (1987)						
Control school	74					67 ($p<0.05$)
Intervention school	82					85
16. Bridgeport hospital employees	87		90	72	81	
17. YNHH employees	94					

Table 4
Knowledge of high-risk behaviors, Connecticut AIDS KAB surveys (1986-89)

No. Survey (% ans cor)	*People who have sex with a person who has AIDS*	*People who share needles*	*Men who have sex with men*	*Babies born to mothers with AIDS*	*Men who have sex with many women (no condom)*	*Women who have sex with many men (no condom)*
1. Gay men		99/98		99/98		
2. Hard-to-reach white gay men	90	98		99		
3. Black gay and bisexual men	88	100		95		
4. Hispanic gay and bisexual men	96	100		88		
5. Streetwise IVDU	93			92		
7. Hartford neighborhood (Asylum Hill)						
White			100	100	97	99
Black			99	97	97	98
Hispanic			87	78	81	85
8. Hartford neighborhoods (Frog Hollow, Upper Albany, South End)						
White	100	100 ($p<0.03$)	100 ($p<0.01$)	99	99	99 ($p<0.04$)
Black	99	100	99	98	99	100
Hispanic	99	97	97	96	97	95
9. Urban adults						
White	99 ($p<0.01$)	99 ($p<0.001$)	97 ($p<0.01$)	93 ($p<0.01$)	96 ($p<0.01$)	96 ($p<0.001$)
Black	97	98	93	91	92	88
Hispanic	94	93	90	84	88	84
Other	100	100	89	86	86	86
10. Statewide						
White	98	99		94		
Black	98	98		95		
Hispanic	97	99		94		
USA	99	99		96		
12. New Haven adults	98	96	98	91	82	86
13. High school students (1986)	95	80	92	81		
14. High school students (1987)						
Control school		97	98	88 ($p<0.05$)		
Intervention school		100	100	96		
16. Bridgeport Hospital employees	94	96	95			
17. YNHH employees	96	97				

respondents in the surveys of gay men. The mean age of respondents in the various studies was in the 20s to 30s range except for the risk behavior survey (mean age 44.6) and the AIDS school policy survey (mean age 44.8). Certain surveys excluded age groups below 18 or above 50 in order to target those most likely to encounter AIDS by virtue of age.

Knowledge of AIDS. Of fundamental importance to AIDS educational programs is that people appreciate that there is an asymptomatic healthy carrier state and that these individuals can transmit HIV. Several questions from the various Connecticut questionnaires approached this issue either directly or indirectly (Table 3). Gay men and hospital employees had the highest percentage of respondents saying that "it is possible to be HIV positive and look healthy" (87-97%). Street-wise drug users also had a relatively high percentage responding correctly (80%). By contrast, population-based survey respondents (#7-10, 12) had a lower percentage of correct answers, especially among Hispanics (43-77%). Some surveys further stratified the responses to this question. The urban adults survey reported that those with "more than four sex partners in the previous year" were less likely (55%) to be aware of the healthy carrier state than those who had "read an AIDS pamphlet" (71%) or those who had been "tested for HIV" (70%). In addition, concerning a related question, "you can tell if a person has AIDS just by looking at them," the statewide survey reported that 73% of Connecticut residents believed the statement to be "definitely" false. However, only 53% of those with less than 12 years of education and 60-64% of minority individuals responded similarly.

Given the importance to AIDS prevention efforts that an understanding of the infectious potential of healthy carriers is achieved, additional questions were asked. For example, several surveys asked about the infectious potential of HIV positive people. Although greater than 85% of gay respondents answered correctly, among the respondents in the statewide adults survey this percentage was 67%. However, greater than 90% of respondents in the statewide survey, whether stratified by race or education, and 93% of street-wise IVDU were aware that "any person with AIDS virus can pass it on to someone else during sex." In refinement of this question 84% of street-wise IVDU responded that "you can get AIDS from a person who has the virus even if they look OK."

Four questions required the respondent to apply knowledge of the asymptomatic carrier state to transmission from IVDU (Table 3). Generally high percentages of respondents recognized that IVDU mothers can transmit HIV to their babies (70-99%) and that HIV can be transmitted sexually from healthy-looking IVDUs (73-99%). However, considerably fewer respondents recognized the potential for acquiring HIV by having sex with former IVDUs (56-92%) or that offspring of IVDU fathers are at increased risk (63-95%). In general, high school students prior to formal educational efforts and Hispanics had the poorest correct response rate to these questions.

A second focus of AIDS education efforts is to have people recognize that certain behaviors place people at high risk for acquiring HIV. All surveys indicated that respondents to these questions have correctly assimilated risk behavior information (Table 4). In addition to the specific information contained in Table 4, the results are valuable in demonstrating the possibility of achieving very high knowledge levels on specific AIDS issues across a significant spectrum of the population. Respondents were particularly well informed about the risk associated with sharing needles, gay sex (male), and sex with a person with AIDS. The one exception to this was the high school students who in 1986 were less aware of the risk of sharing needles (80%). Over time, however, this percentage improved to 97% even without formal AIDS education in school as shown in the 1987 high school survey. For questions regarding the risk status of "babies born to mother with AIDS" and persons with multiple heterosexual sex partners, Hispanics tended to answer incorrectly more often than blacks and whites. This was not a consistent finding, however (see surveys #8 and #10). A question was also asked on several surveys about whether HIV can be transmitted sexually between women. Approximately two thirds of urban adults and high school students answered affirmatively.

In Table 5, results are shown from various surveys concerned with a knowledge of measures that can be taken by individuals to prevent sexual transmission of HIV. Overall knowledge was good with 80-99% of respondents in most surveys answering correctly. As before, however, Hispanics often scored markedly lower on these questions. Three prevention areas left substantial room for

Table 5
Knowledge of preventive measures, Connecticut AIDS KAB surveys (1986-89)

To prevent getting the AIDS from a sex partner_______.

No. Survey (% answering correctly)	*Don't have sex*	*Use a condom*	*Avoid sex with IVDU*	*Avoid gay sex*	*Avoid anal intercourse*	*Avoid vaginal intercourse*
1. Gay men	77/81	84/90			89/86	
2. Hard-to-reach white gay men	95	96				
3. Black gay and bisexual men	88	95				
4. Hispanic gay and bisexual men	84	96				
7. Hartford neighborhood (Asylum Hill)						
White		82	96	92	86	51
Black		83	93	93	81	54
Hispanic		36	88	86	66	57
8. Hartford neighborhoods (Frog Hollow, Upper Albany, South End)						
White		79	99		95	71
Black		82	93		89	61
Hispanic		88	94		89	65
9. Urban adults						
White	89	87				
Black	83	79				
Hispanic	86	68				
Other	93	90				
10. Statewide adults						
White	98	94				
Black	91	89				
Hispanic	91	83				
USA	97	88				
12. New Haven adults	86	86				

Table 6
Misconceptions about HIV transmission, Connecticut AIDS KAB surveys (1986-89)

People can get AIDS by_______.

No. Survey (% ans affirm)	*Donating blood*	*Non IV drug use*	*Using public toilets*	*Shaking hands with a PWA*	*Exposure to sneezing or coughing*
1. Gay men		7/8	11/5		
2. Hard-to-reach white gay men	13	5			
3. Black gay and bisexual men	7	12			
4. Hispanic gay and bisexual men	12	20			
7. Hartford neighborhood (Asylum Hill)					
White	32	50		12	22
Black	42	45		13	33
Hispanic	52	43		23	34
8. Hartford neighborhoods (Frog Hollow, Upper Albany, South End)					
White	31 ($p<0.0002$)	17 ($p<0.006$)	14	3 ($p<0.003$)	33
Black	54	35	12	7	26
Hispanic	55	31	11	14	32
9. Urban adults					
White	21 ($p<0.001$)[a]	27 ($p<0.006$)[a]	17 ($p<0.001$)[a]		
Black	39	32	23		
Hispanic	45	50	37		
Other	45	44	31		
10. Statewide					
White	13		11	3	15
Black	37		15	8	25
Hispanic	32		28	5	20
USA	21		17	8	26
12. New Haven adults	31	11	15		
13. High school students (1986)	38	12		11	
14. High school students (1987)					
Control school	27($p<0.05$)			6	
Intervention school	18			5	
16. Bridgeport Hospital employees	6	12		1	
17. YNHH employees	6			2	

[a] Percent answering "yes" or "don't know"

improvement: condom use and vaginal and anal intercourse. Except for gay men, less than 94% of respondents correctly indicated that condom use could prevent HIV transmission, with Hispanics in surveys #7 and #9 being right less than 70% of the time. Responses to "avoiding anal intercourse" tended to be correct less often than those to "avoiding gay sex." This suggests that some people may be uncertain about either the mechanism of gay sexual transmission or the risk involved in anal sex with women. Generally, less than two thirds of respondents thought that avoiding vaginal intercourse was a way of preventing AIDS.

In addition to these questions, individual surveys inquired about the perceived effectiveness of techniques such as the use of birth control pills, use of a diaphragm, showering before sex, and douching after sex in preventing the sexual transmission of AIDS. Overall, from the statewide survey 3-10% of respondents were of the opinion that these techniques are "very" or "somewhat" effective. However, from 5-20% did not know. Stratification by education and ethnicity in the same survey suggests that these misconceptions are found with increased prevalence among those with less than 12 years of education and minority populations (10-20% saying "very" or "somewhat effective" and an additional 8-30% who "don't know"). These responses suggest that as many as 30% of respondents had some confusion regarding the biology of HIV transmission.

Perhaps not surprisingly, considerable misconception surrounding transmission of AIDS was found. Table 6 shows responses to selected questions from the 13 studies addressing at least one question to this issue. Most commonly asked was a question about the risk of contracting AIDS from donating blood. Misconception about this issue seemed to be more prevalent in Hispanics and blacks (32-55% of whom judged blood donation to be a risk) but was also significantly high among whites (13-32%). The respondents in the health care workers surveys performed the best (<10%). Significant numbers of people also thought non-IV drug use entailed some risk for AIDS regardless of whether the question was asked as "snorting drugs" or "smoking drugs." Blacks and Hispanics performed less well on this question but whites had a significant amount of misconception also. Lower percentages of respondents felt that shaking hands or touching a person with AIDS could result in transmission of AIDS (generally <15%). Exposure to sneezing or coughing was believed by 15-34% of respondents to be a risk factor for transmission of the AIDS virus. Interestingly, despite reasonably good knowledge of AIDS transmission, 49% of Bridgeport Hospital employees expressed "moderate" to "extreme" concern about being in the same room with an AIDS patient. Sixty-seven percent expressed the same degree of concern about touching an AIDS patient. In addition it should be noted that along with those persons having definite misinformation as demonstrated by affirmative answers to questions in Table 6, there were also significant numbers of respondents who answered "don't know" to the questions in this table (for example, 3-15% of all respondents in the statewide survey).

Attitudes towards AIDS. Several surveys included questions involving public policy towards AIDS prevention (Table 7). There was almost universal support for the proposals that AIDS prevention be taught in high schools and for the promotion of condom use to prevent AIDS. Indeed, in certain surveys similar approval was given to the notion that condoms be made available in public places and in school clinics (surveys #7, #8). Support for distributing clean needles an syringes to IVDU was more divided. While only a minority of individuals favored keeping children or adults with AIDS out of school and people with AIDS be kept out of the work place, this minority was substantial in the Hartford neighborhood surveys. When stratified by race/ethnicity, Hispanics were more likely to prefer that children with AIDS be kept out of school and people with AIDS be kept out of the work place. This is perhaps not surprising given the greater amount of misconception about transmission among Hispanics. Nevertheless, all three groups were very supportive of AIDS education (>95%) and promotion of condoms (≥85%) while giving only moderate support for needle exchange programs (33-66%).

Interestingly, although the number of respondents was low in the AIDS policy for school settings survey, respondents with children were more likely to be in favor of keeping children with AIDS out of school than respondents without children (23% vs 6%, p=0.007). In this same study using a series of questions concerning knowledge of AIDS, subjects were graded as passing or failing. Those who received a passing score were more likely than those who failed to have the opinion that children with AIDS should be allowed to attend school (83 vs 65% p<0.05). Similarly, they were more likely to believe that a person with AIDS should be allowed to teach in the school system

Table 7
Attitudes towards AIDS prevention and public policy options, Connecticut AIDS KAB surveys (1986-89)

What should health/government officials do to prevent the spread of AIDS? (% saying yes)

No.	*Survey*	*Teach all high school children AIDS prevention*	*Promote the use of condoms to prevent AIDS*	*Give needles and syringes to IVDU*	*Keep children with AIDS out of school*	*Keep PWA out of the work place*
1.	Gay men		96/-			
7.	Hartford neighborhood (Asylum Hill)					
	White	96	96	42	12	16
	Black	99	93	49	22	24
	Hispanic	97	92	37	25	37
8.	Hartford neighborhoods (Frog Hollow, Upper Albany, South End)					
	White	99	96	66	30 (p<0.001)	34 (p<0.001)
	Black	99	93	49	12	23
	Hispanic	99	99	65	33	51
10.	Statewide adults					
	White	98	94	40	6	9
	Black	98	85	33	4	10
	Hispanic	99	90	41	12	22
	USA					
12.	New Haven adults	96	86	33	25	22
15.	AIDS: policies for the school setting					
	With children				23 (p=0.007)	
	Without children				6	
17.	YNHH employees				15	

Table 8
Personal concerns and experiences with AIDS, Connecticut AIDS KAB surveys (1986-89)

No. Survey	*Is there a cure for AIDS? (%saying no)*	*Do you know someone with AIDS? (% saying yes)*	*Have you talked about AIDS with a sex partner? (%saying yes)*	*How much do you worry about getting AIDS?*	*What are the chances you might get AIDS?*	*Do you want to know more about AIDS? (% saying yes)*
1. Gay men		70/80		43/66^{a}	37/52^{b}	81/76
2. Hard-to-reach white gay men			65	43^{a}	52^{b}	
3. Black gay and bisexual men			76	44^{a}	61^{b}	
4. Hispanic gay and bisexual men			67	34^{a}	48^{b}	
5. Streetwise IVDU	70					61
7. Hartford neighborhood (Asylum Hill)						
White	89 (p<0.003)	22 (p<0.24)	65	32 (p<0.0001)^{c}	18 (p<0.0001)^{d}	67
Black	81	19	49	49	24	75
Hispanic	66	28	35	29	56	71
8. Hartford neighborhoods (Frog Hollow, Upper Albany, South End)						
White	94 (p<0.005)	39 (p<0.00001)	55	13 (p<0.00001)^{c}	3 (p<0.0001)^{d}	37
Black	77	19	58	33	10	71
Hispanic	77	24	47	48	18	68
9. Urban adults						
White		16	65		8^{e}	82
Black		21	69		8	86
Hispanic		15	49		10	85
Other		21	42		4	96
10. Statewide adults						
White	89	16			4^{f}	44
Black	84	22			5	54
Hispanic	82	14			9	58
USA		13			3	
11. Risk behavior survey		10			5^{f}	
13. High school students (1986)	61					74
16. Bridgeport Hospital employees	89	9				85
17. YNHH employees		28				

^{a}Often, all the time; ^{b}50:50 or greater; ^{c}Somewhat, a great deal; ^{d}Somewhat likely, very likely; ^{e}Quite possible; ^{f}Medium, high

(71% vs 52%, p<0.005). However, in spite of their knowledge of AIDS, those receiving a passing score were not strongly in favor of allowing persons with AIDS to work in the school cafeteria (47% in favor).

The Yale-New Haven Hospital employees survey was able to assess the attitudes of persons attending an AIDS education seminar versus those who did not. When asked if they would refuse care to AIDS patients if given a choice, 22% of those attending the seminar said they would refuse while 49% of those who did not attend would refuse. Fear of acquiring AIDS on the job was also assessed with 25% of attendees being fearful compared to 37% of nonattenders. Subjects were also asked to rate the sympathy they felt towards patients who had contracted AIDS in various ways. While 92% were "very" sympathetic towards patients with transfusion-associated AIDS, only 53% expressed the same degree of sympathy for heterosexuals with AIDS, 33% towards homosexuals with AIDS, and 23% towards IV drug abusers with AIDS. In the statewide survey 91% of respondents said they had "a lot" or "some" sympathy for people with AIDS, 5% said "not much," and 1% volunteered that they had "none."

In the urban survey a question was asked regarding the willingness of respondents to have a child even if they were HIV positive and given that the child would have a 50-50 chance of being infected. Eight percent of respondents said they would bear the child. Further, 14% of those "HIV tested," 8% of "read AIDS pamphlet," and 27% of those who "had more than four sex partners in the previous year" likewise would bear the child.

Seventy-seven percent of respondents in the college men portion of the gay men survey and 71% of the respondents in the Health Collective portion said they knew more about AIDS than most gay men. Ninety-nine percent overall said they know more than the general population. Consistent with this attitude was the belief held by a majority of surveyed gay men that they were less likely than other gay men to get AIDS (65%/61%). Twenty percent and 13%, respectively, assessed their risk as greater than most gay men.

AIDS-related concerns and experience. A number of Connecticut surveys attempted to get information on respondent's personal concerns and experiences with AIDS, including HIV antibody testing. Table 8 shows responses to questions assessing personal concerns and experiences with AIDS. With one exception only a minority of respondents "know someone with AIDS" (9-39%). The exception was that 70-80% of the gay men in survey #1 knew someone with AIDS. Comparing this with the prevalence of reported risk behaviors, the "worried" percentage of respondents is considerably higher than the percentage of respondents with clearly identified high risk behaviors (Table 12) but consistent with the percentages of respondents with two or more sexual partners in the past year (Table 11) and also consistent with percentages of persons with major misconceptions of how HIV is transmitted (Table 6). Percentages of respondents who felt they were at least "somewhat" likely to get AIDS (Table 8) varied from 3-61%, with gay men and minorities consistently higher than others surveyed. Between a third and three fourths of people responded that they had spoken to a sex partner about AIDS prevention. A breakdown of responses in the urban adults study showed that 55% of those with "more than four sex partners in the previous year," 68% of those who had "read an AIDS pamphlet," and 71% of those who had been "tested for HIV" reported talking to a sex partner about AIDS. When asked in the risk behavior survey if "concern about AIDS had changed your life in any way," 28% of males and 23% of females responded that it had. Encouragingly, in the 18-24 age group this percentage increased to 62% for males and 44% for females. When stratified by education or income, no striking differences emerged.

Table 9 shows information about HIV antibody testing. Awareness of the test was generally high and nearly universal among gay men. Testing was most common among gay men with 34-64% reporting having been tested "ever." About 10-30% of the respondents from the other surveys have been tested. Where reported, males were more likely than females to have been tested for HIV. In the risk behavior survey 17% of males and 7% of females had received the test. In the urban adults survey, the respective figures were 25% and 11% ($p<0.01$). There was only minor variation in testing with education: 12% of those having less than a ninth grade educational and 13% of those with postgraduate education had been tested in survey #11. There were also no differences when stratified by income in the same survey. Of those who had been

Table 9
Questions about testing for HIV, Connecticut AIDS KAB surveys (1986-89)

No. Survey	*Is there a test for the AIDS virus? (%saying yes)*	*Have you been tested____? In past year*	*Ever*	*Would you be willing to be tested at the following sites? Anon*	*Confid*	*MD*	*Do you plan (would you like) to be (re)tested in the future?*	*What were your test results? (% positive)*
1. Gay men	97/95		36/34	63/65	18/13	13/23	42/17	-/3
2. Hard-to-reach white gay men	96		42	59	9	31	63	17
3. Black gay and bisexual men	100		64	63	8	29	60	19
4. Hispanic gay and bisexual men	94		52	36	29	36	87	39
7. Hartford neighborhoods (Asylum Hill)								
White	4 (p<0.0001)[a]	13	14 (p<0.07)	70 (p<0.002)	62 (p0.02)		26 (p<0.001)	
Black	13	15	14	87	65		50	
Hispanic	40	5	5	91	81		79	
8. Hartford's neighborhoods (Frog Hollow, Upper Albany, South End)								
White	2 (p<0.0003)[a]	20	20	67 (p<0.00001)	55 (p<0.00001)		26 (p<0.00001)	
Black	11	26	28	89	80		55	
Hispanic	15	21	24	93	83		66	
9. Urban adults								
White			14					
Black			18					
Hispanic			11					
Other			28					
10. Statewide adults								
White	87		14			40	27	
Black	73		10			50	33	
Hispanic	71		16			16	34	
USA	84		23					
11. Risk behavior survey			12					
12. New Haven adults	86						46	

[a] Percent saying "don't know"

Table 10
Knowledge and condom use in gay men, Connecticut AIDS KAB surveys (1986-89)

Question [% saying yes (Don't know)]	*Gay men*		*Hard-to reach white gay men*	*Black gay and bisexual men*	*Hispanic gay and bisexual men*
You can protect yourself from AIDS if you use rubbers more often.	97/95		96 (3)	95 (5)	96 (0)
You can protect yourself from AIDS by using a rubber with someone you know who might have it (AIDS).	-		67 (12)	83 (5)	70 (15)
You can protect yourself from the AIDS virus if you always use rubbers when having sex with someone whose HIV status is unknown.	78/67		79(7)	91(0)	76 (21)
You can protect yourself from AIDS if you use rubbers treated with spermicide.	77/73		57 (25)	69 (21)	75 (24)
Natural skin condoms are protective against AIDS.	22/22		23 (38)	18 (18)	22 (44)
Have you ever had sex without a rubber with someone who you knew had AIDS or the virus that causes AIDS?	3/3		5	11	17
Have you ever had sex without a rubber with someone who you later found out had AIDS or the virus that causes AIDS?	7/14		11	23	29
In the past year, did you engage in receptive anal intercourse with others whose HIV status was unknown?	73/76[a]		39	45	53
How often did you use a condom?					
Never	10/10	(0%)[b]	25	16	36
Rarely	13/13	(1-25%)	13	-	18
Sometimes	4/10	(26-50%)	13	21	13
Often	6/2	(51-75%)	11	16	11
Always	40/43	(76-100%)	37	47	22
In the past year, have you had vaginal sex with a women?	12/2		19	36	25
Using a condom (always)?	50/100	(76-100%)	22	7	14
Without a condom (never)?	50/0	(0%)	50	50	71

[a] Not specific for knowledge of partner HIV status in this survey.
[b] Percent of times using condoms, "gay men" survey only

tested, 35% reported that the testing had been done in the course of blood donation. The statewide survey reported likewise that level of education was not related to likelihood of having been tested in that 10% of those with less than 12 years, 10% of those with 12 years, and 16% of those with more than 12 years reported being tested. However, of those with less than 12 years of education, a much higher percentage (43%) had not heard of the test compared with those with 12 years of education or more (18% and 9% respectively). Overall, 15% of the respondents in the urban adults survey had been tested. When the responses were stratified by risk behavior, the percentages were as follows: 35% of those who had shot drugs, 28% of individuals with prostitute contact, 21% of partners of IVDU, 19% of females with bisexual male partners, 27% of those with any high-risk behavior during the year, and 33% of those having "more than four sex partners during the year."

Considerably more persons were interested in being tested in the future than had already been tested (Table 9). Interest was particularly high in minorities (33-79%) and gay men (up to 87%). Acceptability of being tested at anonymous sites and confidential sites was asked in the gay and Hartford neighborhood surveys. Whereas anonymous testing was acceptable to most respondents, relatively few gay men in any of the four gay surveys were will to be tested with their name given (8-29%). Most Hartford neighborhood respondents, however, would be willing to give their name (55-83%).

Condoms and sexual behavior. Table 10 reflects the emphasis that the gay surveys placed on knowledge about the use of condoms. Overall, recognition that "you can protect yourself from AIDS if you use rubbers more often" was very high with 95% or more of respondents from all four surveys answering correctly. However, there appeared to be less certainty of efficacy of condoms when having sex with a person who might have AIDS or when a sex partner's HIV status was unknown, with up to 21% of respondents answering "don't know." Only about half of all survey respondents knew that natural-skin condoms are not protective against HIV, with uncertainty highest in Hispanics and hard-to-reach gay men.

In spite of the generally high knowledge levels about HIV and its prevention, a considerable percentage of respondents in all gay groups, but especially in Hispanic men, have continued to engage in unprotected rectal intercourse, including with persons known to have AIDS or whose HIV status was unknown. In the latter case, only 33-63% "often" or "always" used condoms. Of additional concern, from 2-36% of gay and bisexual respondents have been heterosexually active in the past year, and condoms were "always" used only 7-100% of the time. Although a battery of questions in these surveys showed that gay sexual expression remains important in spite of the risk of AIDS, it is uncertain why condom use is not higher in clearly high-risk situations.

Table 11 shows responses from the two Hartford neighborhood surveys to questions about condom use and number of sex partners. These surveys were chosen because of their demographic mix and because Hartford is a high AIDS incidence area. Experience with condom use was relatively low with 35-74% of respondents "never" having used condoms. In addition, there was an apparent gap between condom use and number of sexual partners. Condoms were "always" or "frequently" used by 8-26%, whereas 20-52% had two or more partners in the preceding year. There were no consistent statistical differences between racial or demographic groups on these factors, or between these surveys and other surveys of general population groups in which these data were available. (Surveys #9, #12).

Table 12 presents results of questions reflecting the prevalence of major HIV risk behaviors. The percentage of respondents from any of the general population group surveys who engaged in any of these risk behaviors over the preceding 10 years was generally less than 15%. The comparable percentage over the year preceding the survey tended to be considerably lower. Having unprotected sex with an IVDU was usually the most common risk behavior reported of those listed, while injecting drugs tended to be the least common (1-4% of respondents in the past year). When stratified by sex, in the urban adults study, males were more likely than females to have engaged in risk behaviors (18% vs 8%, $p<0.001$). Specifically, males were more likely to have used IV drugs (14% vs 3%, $p<0.001$), had unprotected sex with a prostitute (21% vs 3%, $p<0.001$), and had unprotected sex with a possible IVDU (19% vs 12%, $p<0.001$). While 12% of males reported having unprotected sex with more than four partners in the previous year, 3% of females did likewise. Stratifying another way, the urban adult survey reported that those having "more than four sex partners in the previous year" were more likely than those who had "been tested for HIV" or who had "read an AIDS pamphlet" to have engaged in risk behavior in the previous year (42% vs 20% vs 11%).

The drug treatment entrants and streetwise surveys addressed prevalence of high risk behavior associated with IVDU. Shown in Table 13 are questions relating to drug treatment, IVDU behavior, behavior change in response to AIDS and sexual behavior. There was no overlap in the two survey instruments. Both surveys showed high rates

Table 11
Condom use and number of sexual partners, Hartford neighborhood surveys (1988,89)

Question	*Hartford neighborhood (Asylum Hill)*						*Hartford neighborhoods (Frog Hollow, Upper Albany, South End)*					
	White		*Black*		*Hispanic*		*White*		*Black*		*Hispanic*	
	M	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*
How often have you (or your partner) ever used condoms (rubbers) while having sex together? (%)												
Never	41	67	39	35	38	57	39	49	38	45	71	74
Occasionally	30	8	37	43	39	27	34	31	36	27	17	14
Frequently	9	13	10	6	10	5	13	13	14	15	6	5
Always	5	4	14	8	6	5	12	7	8	11	5	3
How many different sexual partners have you had in the past year? (%)												
0	14		7		6		9		9		17	
1	59		42		69		60		55		61	
2	4		22		8		22		22		12	
3 to 4	17		22		10		9		13		7	
5 to 9	3		5		6		0		2		1	
10 or more	3		3		2		0		1		0	

Table 12
Prevalence of HIV risk behaviors, Connecticut AIDS KAB surveys (1986-89)

Have you________in the past year (since 1977 or 1978)?

No. Survey	*Ever had any kind of VD?*	*Injected drugs*	*Had sex with an IVDU (no condom)*	*Had sex with a homosexual or bisexual male*		*Had sex with a prostitute (no condom)*	*Done any of the previous*
				male	*/ female*		
1. Gay men	25/53			89/85			
2. Hard-to-reach white gay men	33			95			
3. Black gay and bisexual men	64			89			
4. Hispanic gay and bisexual men	36			91			
7. Hartford neighborhoods (Asylum Hill)							
White		3	7	14	4	9	6
Black		3	11	6	8	7	11
Hispanic		4	7	4	2	7	10
8. Hartford neighborhoods (Frog Hollow, Upper Albany, South End)							
White		3	12 (p<0.002)	7 (p<0.08)	2	5	8 (p<0.08)
Black		3	4	0	1	3	5
Hispanic		1	3	2	1	5	2
9. Urban adults (since 1978)							
White		(6)	(17) (p<0.01)	(10)	(5)	(9) (p<0.01)	10
Black		(5)	(7)	(8)	(7)	(12)	13
Hispanic		(12)	(12)	(6)	(3)	(5)	14
Other		(4)	(15)	(6)		(7)	
10. Statewide adults							
White							(6)[a]
Black							(6)
Hispanic							(10)
USA							(2)

[a] Also includes persons who have received a blood transfusion and persons who are hemophiliacs.

of needle sharing (50-70%), moderately high percentages of shooting-gallery use (24-36%), and low rates of condom use among IV drug users. In addition the potential for sexual transmission was high, with 68% of drug treatment entrants reporting two or more sexual partners in the past five years. Although prevalence of risk behavior was relatively high, there was substantial interest in prevention: 61% of streetwise IVDU were interested in treatment, and 85% of drug treatment entrants had decreased needle-sharing in response to AIDS. Furthermore, when drug treatment entrants were stratified by year of entry to examine trends, there had been a decrease in needle sharing over time (59% to 44% in the month prior to treatment entry), and an increase in bleach use. Overall, 53% of streetwise IVDU and 68% of drug treatment entrants had previously been in treatment, suggesting that educational efforts in the treatment setting should reach a large percentage of all IVDU.

Given the stratification by city provided in the urban adults survey and that the questionnaires in the urban adults and New Haven adults surveys were similar, it was of interest to determine if differences in AIDS KAB existed in the various urban centers of Connecticut and if there was evidence of change over time. The New Haven adults survey was conducted in 1987 while the urban survey was conducted in 1988 (reported in 1989). Shown in Table 14 are the percent of respondents by city answering correctly to a variety of questions covering the areas of HIV transmission, risk groups, and risk behavior. Results from the various cities surveyed in the urban adults study were quite similar for most of the questions. However, specific questions such as "engaged in risk behavior this year" and knowledge of the healthy carrier state had a broader range of percentages. Assuming that the populations of the surveyed cities had similar knowledge levels about AIDS, the results from the earlier New Haven adults survey can be compared to the later urban adults survey to look for evidence of change over time. Evidence of improved knowledge levels over time is suggested for the majority of questions listed. Importantly, however, there was no change evident in knowledge of or use of condoms.

Table 13
High risk behavior in "Entrants" and "Streetwise" IVDU, Connecticut AIDS KAB surveys (1986-89)

	Percent agreeing or answering affirmatively		
	"entrants"		*"streetwise"*
Question	*1986-1987*	*1987-1988*	*1989*
Treatment:			
Been in previous drug treatment.	69	67	53
Interested in treatment?	-	-	61
IVDU behavior:			
Inject more than twice a day.	62	59	-
I always use my own works.	-	-	30
I know how to clean my works.	-	-	74
I have shared needles.	-	-	50
Shared needles in past year.	70	69	-
Shared needles in past month.	59	44 (p<0.001)	-
Mean number of needles used in previous month.	119 (all "entrants")		-
Used shooting gallery in past year?	24 (all "entrants")		-
past five years?	36 (all "entrants")		-
Do you use shooting galleries?	-	-	33
Sexual behavior:			
Do you use condoms on a regular basis?	-	-	38
Use condoms "always" or "often".	-	9	-
My sexual experiences usually involve alcohol.	-	-	52
I think about AIDS when I choose a sex partner.	-	-	63
Number of sexual partners in past five years (all "entrants").			
	0 3%	3-4 18%	
	1 29%	5-9 15%	
	2 13%	>10 22%	
In response to AIDS:			
Decreased needle sharing.	-	85	-
Clean needles with bleach.	11	34 (p<0.001)	-
Decreased number of sexual partners.	-	35	-

Sources of information about AIDS. As shown in Table 8, there was a considerable range in the percentage of respondents who expressed a desire to know more about AIDS. There were no apparent trends with the exception that the percentage of Hispanics and blacks who wanted to know more tended to be marginally higher than that of whites. The statewide survey inquired if respondents had seen AIDS commercials on TV or had heard then on the radio. Seventy-four percent of Connecticut respondents said they had seen an AIDS commercial and 59% said they had heard an AIDS public service announcement on the radio. The percentages were higher for blacks (86%, 69%) and Hispanics (84%, 67%) than for whites (74%, 58%).

Several surveys asked respondents to rate the relative importance of a series of potential sources of AIDS information. A majority of respondents (78-85%) in the 1988 neighborhood survey chose doctors and city health departments, and AIDS counselors as important sources. Although this was true for all racial and ethnic groups, Hispanics (57-73%) were much more likely than whites (15-51%) or blacks 37-53%) to also rate family and friends as important sources of information about AIDS. In the 1989 neighborhood survey, however, a different result was obtained using a slightly different question. In this survey, respondents were asked which of the sources on the list they had actually used. Television was chosen as the most often used (93%) with doctors, city health department, and AIDS counselors used by only 18-54%. Hispanics (27-31%) were less likely than either whites (31-42%) or blacks (28-46%) to use friends and family as sources of information.

Surveys of gay men (hard-to-reach, Hispanic, black) asked respondents to choose the most important sources of AIDS information and also to choose their preferred sources from the same list. The gay men surveyed reported that booklets were their chief source of AIDS information with family, church and AIDS hotlines of minimal importance. As with the 1988 neighborhood survey, gay Hispanics chose friends as their preferred source of information about AIDS while the hard-to-reach and black gay men preferred doctors or nurses. Booklets ranked less highly as preferred sources of information and churches, family, and AIDS hotlines stayed near the bottom of the list. These results illustrate that for AIDS education efforts to achieve maximum effectiveness, messages will need to target specific groups using a variety of media, and health care providers will need to promote discussion of HIV with their patients.

Discussion

As knowledge of AIDS has accumulated and the major routes of HIV transmission have been identified, it has become accepted that educational efforts have a central role to play in the prevention of AIDS.[4-6,31,32] Determining the prevalence of HIV-related knowledge, attitudes, and

Table 14
Comparison of cities surveyed in "Urban adults" and "New Haven adults" AIDS KAB surveys (Connecticut, 1987,1988)

	Urban adults[a] (1988)					New Haven adults (1987)	1988>1987[b]
	B	S	NL	N	W		
Number of respondents	280	203	115	140	267	539	-
Response rate	—	—	93	—	—	66	-
% White	38	45	75	68	62	49	-
% Black	34	42	18	22	23	41	-
% Hispanic	25	10	6	6	12	8	-
	Percent answering yes or correctly						
Healthy carrier.	51	69	70	83	68	67	N
IVDU mother to baby.	86	91	90	89	85	70	Y
IVDU father to baby.	75	76	81	75	77	63	Y
Sex with healthy IVDU is risk.	84	91	87	91	84	73	Y
Sex with former IVDU is risk.	74	83	79	85	70	61	Y
Sex with PWA is risk.	95	98	99	99	98	98	N
Sharing needles is risk.	95	97	100	100	99	96	N
Mother with AIDS to baby.	85	94	98	91	91	91	N
Women sex many men.	87	92	97	94	95	86	Y
Men sex many women.	93	91	93	95	94	82	Y
Use of condom is preventive.	81	86	85	86	79	86	N
Blood donation is risk.	62	68	77	75	75	62	Y
Public toilets is risk.	73	81	84	79	80	67	Y
Been tested for AIDS?	18	14	20	17	12	-	-
Engaged high risk behavior this year.	13	14	7	18	6	-	-
Discussed AIDS with sex partner.	60	74	71	65	59	55	Y
Ever used condoms?	61	58	49	57	55	55	N

[a] B=Bridgeport, S=Stamford, NL=New London, N=Norwalk, W=Waterbury;
[b] New Haven results (1987) were less than results from each other city (1988); Y=Yes, N=No.

behaviors in population subgroups is invaluable to these efforts. Such information provides a baseline to both direct and evaluate educational programs. Prevalence of risk behavior, in particular, should provide an index of the potential for HIV transmission. Numerous reports have appeared in recent years documenting at both national and local levels the status of various groups with regard to their level of knowledge about AIDS.[33-42]

The results of the Connecticut surveys suggest that Connecticut residents have a good superficial knowledge of AIDS. It would appear that initial educational efforts have been moderately successful in that most Connecticut residents are aware of the seriousness of AIDS, that there is no cure or vaccine, and that it is transmitted by a variety of means including sexually, from mother to child, and by sharing needles. The knowledge area dealt with most successfully by the respondents in these surveys was risk behavior. Correct responses were almost universal to questions concerning the risk of AIDS transmission associated with sharing needles, having sex with people with AIDS, and having unprotected homosexual or heterosexual intercourse.

In addition to widespread recognition of basic risk behaviors, there was other encouraging information about Connecticut residents with respect to AIDS. There was general acceptance of having children and adults with AIDS in schools and in the work place, and of a positive role for the state in the promotion of condom use and in the education of schoolchildren about AIDS. Based on survey results, it appears that 10-30% of the adult population has been tested for HIV antibodies, with the highest levels in persons and groups with the highest risk of acquiring HIV. The majority of people want to know more about HIV, especially urban minorities, suggesting that efforts to make them more aware of their risk have been successful. Where it has been possible to measure trends over time, knowledge levels and/or behavior has improved somewhat for students, urban residents, and among IV drug users.

While the surveys had an encouraging side, they also show that Connecticut residents have substantial room for improvement in both knowledge and behaviors if major progress is to be made in preventing HIV transmission. Although basic knowledge is reasonably high and generally comparable to that found nationally, there is a significant deficiency in awareness of the implications of that knowledge and in the more subtle aspects of AIDS transmission. For example, although most people realized that anyone with the AIDS virus is infectious, fewer knew that HIV-infected people can appear and feel healthy. Although most people were aware of transmission from an IVDU mother to fetus, they were less aware of the IVDU father-to-fetus connection. Additionally, while the danger of sex with a healthy-looking IVDU was readily apparent to the respondents, it was less obvious that there is also a risk of AIDS from a former IVDU. Whereas "gay sex" was recognized as a risk for AIDS, there was somewhat less confidence about the level of risk associated with anal sex. These findings and others suggest that future AIDS education efforts should attend to more specific and detailed information about transmission.

Of primary concern is the relative deficiency of knowledge in those people with less education and members of minority groups, especially since the surveys were generally performed in high AIDS incidence areas. It was a consistent finding throughout that the highest knowledge levels were among educated groups and the lowest were among those with less education, in particular Hispanics and blacks. This trend has been reported by others as well.[32,38-41] Further research is needed to discern precisely the factors associated with low AIDS knowledge, but recent results indicate that Hispanics tended to be marginally less knowledgeable than similarly educated non-Hispanics suggesting that both educational level and cultural influences play a role in this phenomenon.[42] Health-care workers and gay men tended to be well informed, representing a possible gold standard for knowledge level statewide. However, even in these groups a variety of misconceptions were noted as well as specific gaps in knowledge that may need future attention.

There was also a considerable amount of misconception about transmission and prevention. Although national surveys have shown improvements in this area,[40,42] perceptions that transmission occurs by casual contact and by blood donation continue to persist in a substantial minority of individuals. Misconception about transmission may derive from the failure of the respondent to distinguish between a genuine risk associated with a particular behavior and the lack of risk in a closely related behavior. For example, the perception of blood donation as a risk is conceivably an over generalization of the risks that have been associated with receiving blood, with needles, and with bodily fluids. Likewise, non-IV drug use might be perceived as a risk because respondents failed to distinguish between various modes of drug abuse, some of which place the drug user at risk for AIDS and some of which do not. The continued widespread misinformation about AIDS transmission and prevention suggest that people need more specific information about the biology of HIV and its transmission. Additionally, future research should endeavor to identify the sources of these misconceptions and the reasons for their persistence.

The surveys confirm that Connecticut residents have been at considerable risk for HIV transmission, and that recent sexual behavior is sufficient to sustain the HIV epidemic. Generally, more than 10% of respondents engaged in very high-risk sexual behavior since HIV began to circulate in the late 1970s (Table 12). In spite of the well-publicized AIDS problem, condom use remains low, generally less than 10% of respondents frequently use them, while sexual activity and number of sex partners has remained high. Even in the most knowledgeable group, gay men, generally more than 25% have had unprotected rectal intercourse in the recent past with partners whose HIV status was unknown. For substantial improvement to occur, more than simple education is necessary. Determinants of persistent high-risk behavior need to be identified and practical ways developed to modify them. As with sexual behavior, current IV drug use behavior as described by the surveys remains high in Connecticut. Although trends in needle sharing and bleach use have improved, levels of sharing needles and not cleaning needles and syringes remain dangerously high.

Because AIDS is transmitted by means that are inherently personal or deemed illegal, many of the surveys did not collect data on personal behavior for fear of reducing response rates or alienating the cooperation of various interest groups. However, the response rates for those surveys that did place an emphasis on behavior indicate that the public understands the need for these questions and is willing to respond to them. It is of critical importance that future surveys go to greater lengths to measure not only the magnitude of risk behavior change but also seek to measure the determinants of behavior change as well.

One group for whom more detailed measures of risk behavior are needed is adolescents and their parents. None of the surveys measured risk behavior in adolescents. Although there was nearly universal enthusiasm for school-based education, its content should be guided by baseline and serial measurements of risk behavior among students. Attitudinal surveys of parents may be important to assess the leeway that school-based educators might have in providing risk behavior-specific education. In addition, it may be important to have parents share in the student learning process. The survey regarding AIDS school policies indicated that low knowledge in parents corresponded with their favoring less constructive policies regarding AIDS in schools.

Other notable subpopulations in Connecticut on which some risk behavior-specific data have not been obtained are college students and inmates of correctional institutions. In addition, there have been relatively few surveys of health-care providers. Given that health-care providers are the source of choice for most who want to know more about HIV, that their potential to provide effective secondary prevention services to HIV-infected persons has been steadily growing, and that they themselves face occupational risk of HIV exposure, it will be important to gain more information on their attitudes, skills, and willingness to provide primary and secondary prevention services.

Numerous approaches have been taken to assess AIDS KAB in Connecticut. Included were telephone surveys, self-administered questionnaires, and in-person interviews using a variety of sampling techniques including convenience, word-of-mouth, cluster, random digit dialing, and cohort. The neighborhood surveys combined the advantages of random sampling with the advantage of an in-person interview. The statewide survey, being random, was satisfying from a statistical point of view but was limited in that the telephone survey instruments tended to be much shorter. The urban survey sampled clients of government services and other convenient groups thereby compromising, to a degree, the advantage of randomness. However, more questions could be included because a self-administered questionnaire was employed. It is noteworthy, however, that, in spite of the limitations involved with each approach and even though there were significant differences in the findings between surveys on specific topics, the major conclusions from this review were discernable from the results of each of the four major surveys (#7-10) individually. It is also important, however, that while each method has given the same general conclusions, each provided somewhat different estimates of absolute knowledge and behavior levels. To assess trends, methods will need to be consistent from one time period to another.

The primary purpose of this review was to consolidate our knowledge of AIDS KAB in Connecticut. In that process we have been able to review the methods used and to some extent evaluate them. This review and the more detailed information in the individual studies should serve as a baseline for future educational efforts. It should help to sharpen public health efforts to target specific groups with specific information or services. It should also help to guide development of future information-seeking efforts. The surveys carried out in these four years have been diverse and exploratory. Future surveys need to be more directed in their probing, yet also need to measure progress, especially in the area of behavior assessment.

Finally, this summary collates available Connecticut information on public opinion on a variety of policy issues. The answers to questions posed in the surveys strongly suggest that a diverse and broad preventive effort be continued. The surveys also show that increasing effort will be needed to assess and address the reasons behind the failure of a substantial portion of the population to adopt safer behavior.

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AIDS in Women—United States

In the United States, the number of acquired immunodeficiency syndrome (AIDS) cases reported in women has been steadily increasing. In addition, AIDS cases in women account for an increasing proportion of all AIDS cases in the United States. As 1990 drew to a close, reports to the Centers for Disease Control (CDC) of AIDS cases among women were expected to exceed 15,000. From November 1989 through October 1990, women accounted for 11% of all reported cases in adults; from 1988 to 1989, diagnosed cases increased by 29% in women, compared with 18% in men. By 1987, AIDS was the eighth leading cause of death in women aged 15-44 years, based on current trends, AIDS will be among the five leading causes of death in this population in 1991.[1]

Human immunodeficiency virus (HIV) infection disproportionately affects women in racial/ethnic minority groups. Although black and Hispanic women constitute 19% of all U.S. women, they represent 72% of all U.S. women diagnosed with AIDS. In 1988, the death rate from HIV infection was nine times higher for black than for white women.[1] These disproportionate rates largely reflect the occurrence of HIV infection among injecting drug users and their sex partners.

Although all states have reported AIDS in women, annual rates for states vary markedly. From November 1989 through October 1990, 4.3 cases were reported per 100,000 women in the United States. Five areas (the District of Columbia, Florida, New Jersey, New York, and Puerto Rico) reported >10 cases per 100,00 women.

Among all cases of AIDS in women, 85% occurred among women of childbearing age (15-44 years). Approximately one fourth of these women were 20-29 years of age at the time of diagnosis; many were probably infected as teenagers.

Reported By: Div of HIV/AIDS, Center for Infectious Diseases, CDC

CDC Editorial Note: Many women in the United States are unaware they are at risk for HIV infection, and HIV-infected women often remain undiagnosed until the onset of AIDS or until a perinatally infected child becomes ill. Many women with HIV infection are of lower socioeconomic status; therefore, prevention efforts, health care, and social services—including those for drug treatment—rely on public resources.

During 1991, in collaboration with state and local health agencies, CDC will continue to strengthen programs to prevent HIV transmission in women. These programs will 1) further define the risk factors for transmission and the natural history of disease in HIV-infected women; 2) study factors that facilitate or inhibit condom use and incorporate study findings into HIV-prevention strategies; 3) continue to assess women's knowledge of their HIV-risk status and its role in the use of health services; and 4) expand targeted HIV-intervention activities at selected sites. In addition, CDC will continue to collaborate with the U.S. Agency for International Development, the World Health Organization, other international agencies, and other countries to better understand and prevent HIV infection worldwide.

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Paying for the HIV Epidemic

DAVID P. JOHNSON, M.D. AND CARYLE A. JOHNSON, R.N., M.A., C.N.A.

As of April 1990 there were 128,319 individuals diagnosed with AIDS in the United States since the epidemic began in 1981. The number of cases is expected to increase to as many as three times that figure by the end of 1992. In addition, there are between one and two million individuals projected to have a positive human immunodeficiency virus (HIV) antibody test in the United States. These are persons who have been infected with the HIV virus, but who have not yet developed AIDS-related complex (ARC) or AIDS.[1]

There are no reliable estimates for the costs of medical care for individuals who are HIV antibody positive (HPP), but not yet ill with ARC or AIDS. However, with the recent recommendations for the use of zidovudine (AZT) in individuals who are clinically well (but who have diminished helper lymphocyte counts [CD4 cells] below 500), there will be a significant cost for monitoring of individuals who test HIV positive but who do not have clinical symptoms. Estimates based on MediCal (Medicaid in California) indicate that individuals with AIDS consume somewhat less than $4,000 a month, whereas those with ARC generally have somewhat over $1,000 in billed charges each month. Although the cost of caring for individuals with ARC is not usually publically considered, it is estimated to amount to $787 million or about 70% of the cost of caring for patients with AIDS in 1986.[2]

There are many limitations on the projections for dollar amounts. Some of these limitations include the retrospective nature of the data utilized to calculate costs, uncertainty about the projections of numbers of cases, and the possibility of changes in the distribution by major risk groups of persons with AIDS.

Although the epidemic was initially reported in young male homosexuals, the fastest growing risk group at this time comprises intravenous drug abusers (IVDA). Moreover, there is a tragic spinoff from the latter risk group; HIV infection in women is associated with AIDS in infants and children because of exposure in utero, or in the perinatal period.[2]

The face of the HIV epidemic is complex with respect to children. Eighty-one percent of infections among children occur through perinatal transmissions, 16% through the use of blood and blood products, and 3% through other means including consensual sexual activity as teenagers.[3,4] According to a recent public health service survey, up to 6.3% of high school students nationally had reported using intravenous drugs and up to 76.4% had reported having sexual intercourse at least once. The percentage of students who reported having three or more sex partners ranged from 15.1% to 42.6%.[5] A recent report from Harlem Hospital Center in New York City disclosed that the number of children with first hospitalizations for HIV-related disease (HRD) has doubled annually since 1983, and that the total cost for inpatient care for 37 children at that institution was $3.6 million. The average lifetime cost was $90,347 per child, but the range was great, and it amounted to as much as $183,604 for one child. In this particular study, in contrast to estimates for adults, 97% of the children were eligible for Medicaid and only one child had private insurance. Because of the rigidity of the CDC case definition, one fourth of the children who died, two thirds of the ill children, and all the asymptomatic HIV antibody-positive newborns would have been excluded from the estimate of costs because they did not met the strict CDC case definition for AIDS.[6]

At the present time, there is a maldistribution of HIV disease. This is particularly apparent with pediatric HRD where the greatest density of cases is reported from New York City, Newark, New Jersey, and Miami, Florida. Nationally, some states, such as New York, New Jersey, Texas, Florida, and California, have reported two thirds of

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the cases of AIDS, whereas some western states, such as Montana and Idaho, have reported only a handful of individuals with HRD.

The estimated lifetime hospital cost for the first 10,000 patients with AIDS in the United States was about $1.5 billion, or $147,000 for each AIDS patient. Since then, the estimates calculated per patient have been generally in the $60,000 to $90,000 range. However, these costs do not take into account a variety of other expenses associated with the epidemic. These include nonpersonal costs, such as the cost for research, blood screening of individuals for HIV infection, health education information, and support services. The costs in this area have ranged from $319 million in 1985 to an estimated $2.3 billion for 1991. None of the estimates have taken into consideration the indirect costs of the HIV epidemic, which are attributable to a loss of output, secondary to illness and premature death. For the first 10,000 cases of AIDS, these costs were estimated at $4.8 billion, or more than three times the estimate for actual health care costs. Current estimates in this category are for a cost of $55.6 billion in 1991, or more than six times the current estimate for personal health care costs.[1]

The principle payers include self-pay, private insurance, and public programs such as Medicaid and Medicare. In addition, local communities and hospitals provide service for underinsured individuals. A disproportionate percentage of AIDS cases are in public hospitals (61%), where Medicaid was the payer in 62% of cases and private insurance covered only 7% of admissions. There is much state-to-state variability (Alabama still will not pay for its Medicaid patients to have AZT. Medicaid covers 23% of those living below the poverty level in South Dakota, as opposed to 79% in New York, and 88% in Massachusetts).[7] Medicare itself is a very infrequent payer because, although most individuals with AIDS meet the disability standard, until now most such individuals have not been able to survive long enough to meet the 24-month waiting period.

A further influence on the cost of AIDS will be the impact of newer therapies. Virtually all the estimates of cost to date have antidated the use of AZT. If, as now seems likely, future early treatment will include one or a combination of drugs, HRD will become more of a chronic illness, and individuals will require treatment for years before they actually acquire AIDS.[8] Patients will, therefore, spend less time in the hospital and it will become important to evaluate outpatient and home-care cost figures, which are currently unavailable. Paradoxically, the use of multiple drugs may potentially increase medical costs because of the numbers of patients involved and the long duration of treatment.

With longer duration of care, there will be an unanticipated drain on outpatient resources and an increasing obligation to provide outpatient services that range from antibiotic therapy to counseling and addiction treatment. As therapy is developed that is effective in extending survival, there will be increasing ethical and financial questions about the use of labor intensive and expensive forms of medical care such as the intensive care unit.[9]

Changing patterns also relate to duration of survival and its effect on the cost of treating AIDS. Costs-per-patient years for AIDS patients have decreased, according to one study, by as much as 28%. Yet, since the median survival has increased by 70% and will probably continue to increase with the advent of semieffective drug therapy, speculation as to lower costs in the care of AIDS patients may be premature.[10]

Although Bloom et al[11] have claimed that the overall economic impact on the nation's economy of AIDS cases will be slight, the effect in cities particularly hard hit with AIDS may be disproportionately large. Whereas, 3% of New York City's hospital beds were occupied with AIDS patients in 1986, by 1991 the rate is expected to be in the neighborhood of 10%.[10] Although the increasing caseload is largely accounted for by individuals who are HIV positive evolving into actual cases of AIDS, AZT seems to postpone AIDS-related infections and prolong the disease, so that infected individuals will remain in the system longer.

Particularly in areas hard hit with the epidemic, the question now is who will pay the AIDS hospital bill. Since as many as 20% of AIDS patients in the New York City area are without either private insurance or Medicaid coverage, an extreme cost burden has fallen on a few hospitals that have attracted many of these patients. Medicaid payments are frequently lower than the cost of treatment, further complicating the financial picture of these hospitals.[12] Accordingly, health care providers, such as hospitals, are looking for ways to shift cost to the federal government or to private insurers. Insurance companies, on the other hand, have been pursuing aggressively a campaign to limit their financial exposure. This has been partially accomplished by attempting to limit individuals with HIV infection, from obtaining health insurance. HIV antibody tests have been utilized where permitted by law, and AIDS-related questions have appeared on applications and physicians' statements evaluating applicants for AIDS risk factors. Companies that "self-insure" their employees, in some cases, have attempted to exercise the option of excluding AIDS from covered illnesses.

Recently, it has been suggested that it is unfair to single out AIDS for special government help, in juxtaposition to cancer or heart disease. In 1989, $2.1 billion was spent for AIDS and HIV-related disease while there were 34,388 deaths. The figure for government spending for heart disease was $1.01 billion, with 777,626 deaths in 1989. At the same time, there was $1.45 billion spent for cancer in 1989, with 494,422 deaths.[13] However, it seems inappropriate to compare a rapidly expanding epidemic infectious disease with heart disease and cancer.

In the eight years from 1982 to 1989, federal spending for AIDS was $7.5 billion. By 1992 it is projected that spending will rise to $4.2 billion, representing 1.8% of the $238 billion of total federal health spending projected for that year. This amount pales in comparison with the estimated $200 billion that is needed to bail out the thrift industry, or the estimated $128 billion to clean up nuclear power plants.[13]

Just as current mechanisms for payment for health care, in general, are a disorganized "polyglot" linked to inequity, at the present time there is no well-defined national policy for the HIV problem as a whole, or for paying for the care of HPP with or without AIDS or ARC. Current approaches to solving the problem of paying for HRD are a patchwork of "add-ons." Belatedly, expenditures for the care of persons with AIDS are increasing, but the lack of a comprehensive approach insures that many will be left without necessary support to pay for their care.

In the absence of a national policy for care of patients with AIDS and HRD, despite the increasing expenditures of funds, it is apparent that a national consensus should be achieved and policies established. Whereas senior health executives, heretofore, have been opposed to national and state health insurance, a majority of them have favored provider networks, provider price controls, protocols for technology assessment, utilization review, and other means of reducing services, as well as increased cost sharing. On the other hand, the Gallop Poll shows that 83% of Californians favor a national health insurance initiative.[14] Meanwhile, Oregon has been experimenting with rationing of health care by establishing consensus through community meetings in order to stretch Medicaid dollars by covering more indigent residents through offering fewer services.[15] All of these ideas (potential rationing, funding on a national basis, cost sharing through private insurance and businesses, and cost controls) will have to be considered as potential strategies for paying for the care of HPP.

At the present time it is a national scandal that 37 million individuals in the United States do not have adequate (or any) medical insurance, and 20% of the AIDS population lack any form of medical coverage. With respect to HPP, there should be a reasonable level of comprehensive medical and social care for all individuals in the United States regardless of where they live, or whether they hold a job. The care should be provided, if necessary, without cost to the individual, and without reservation because of social status, sexual preference, or other forms of social discrimination. Care should be provided for all HPP, not simply those designated as having AIDS by CDC criteria.

The cost of any program should be shared equitably by all segments of the population. No state or municipality should bear a disproportionate share of the costs. The program should not place an undue burden on individuals, employers, insurance companies, hospitals, or HMOs. At the same time, inequities that exist among states with respect to Medicaid funding should be eliminated. Realistic studies of costs with respect to the entire HIV problem should be initiated. We cannot rely on consideration of cost for only the late aspects of the problem (AIDS, itself).

A program of national scope that is coordinated throughout the country should address the issue of providing satisfactory education for the youth of America with respect to the risk of HRD. Exploration of the association of HIV with the use of intravenous drugs or as a consequence of sexual exposure, beginning with children, and extending to the adult population, should be emphasized. The educational program would be an acknowledgement of the fact that the cost of providing health care cannot be reduced or controlled until the growth of the epidemic is halted, and that this will not happen until there is increased compliance with programs to diminish exposure for those at risk for HRD.

There must be agreement that HRD is a "special case," an emergency that threatens the *entire population* of the United States, and that it is wrong to hold back funding and planning for HIV on the grounds that it should be treated just like other health problems, such as cancer or heart disease. One only has to look at the anticipated loss of most of the population of Central Africa to realize that the potential for decimation of the population far exceeds that for any other category of disease known to man, particularly if heterosexual spread ever approaches the level currently being experienced in Africa.

There should be an emphasis on providing care for all HPP whenever possible on an outpatient basis (through VNAs, home health care high technology providers, and physicians' offices and clinics). The current trend of basing expectations for treatment on inpatient hospital care should be reevaluated. The current Medicare policies for denying or discouraging home health care must be reversed judiciously as a means of providing quality care at minimal cost.

Health care for HPP should be paid for by "closing the gaps," utilizing current Medicaid, Medicare, private insurance, and employer mandates. The two-year waiting period for Medicare eligibility should be reduced or eliminated. Persons who are unable to afford private insurance and who are ineligible for Medicare or Medicaid coverage should receive insurance coverage through employer-funded programs. High risk populations, such as IVDA, should be provided insurance through a risk pool if they are ineligible for employer-funded insurance. Medicaid coverage should be extended to all currently uninsured poor with incomes below the federal poverty level. States should be encouraged to implement programs for out-of-hospital services through the use of Medicaid waivers for AIDS care. Medicaid is limited because of poor payment levels, inconsistent eligibility requirements, and variable benefits. Few states take advantage of the Medicaid AIDS Waiver Program.[8] If Medicaid coverage were extended to all those below the federal poverty line, 11 million of those currently uninsured would be covered at a cost of $11 million.

If workplace health insurance coverage were required, this would extend coverage to those who are currently uninsured, including 5.3 of the 10.9 million poor that a separate, expanded Medicaid program would cover. If an additional Medicaid feature were allowed for those with incomes between poverty level and 200% above that level, an additional 6.4 million unemployed or part-time employed persons without health insurance would be added.[5]

Benefits under the Consolidated Omnibus Budget Reconciliation Act of 1983 (COBRA) could be utilized whenever possible by encouraging public and private agencies to pay premiums for those who lack resources to do so. Many individuals are unaware of COBRA, or cannot afford it because of unemployment and illness. Nevertheless, full use of COBRA would keep these individuals off Medicaid and out of the pool of uninsured by maintaining the health insurance established by their former employers.[7] There should be a bridge to cover the gap between the time when COBRA ends and Medicare disability begins, unless the 24-month waiting period is eliminated.

Currently, 86% of commercial insurers and many self-insured employers plan to screen for HIV infection and to screen out those who are positive, or exclude payment for HIV-related illness.[5] This approach should be discouraged, or else individuals identified to be a high risk should be placed in a mandatory insurance pool.

Built into any national policy there must be an innovative approach leading to a modification of behavior among persons at risk. While the epidemic initially appeared among male homosexuals and IVDA, new risk groups are rapidly developing. These include persons exposed to unprotected heterosexual sex with individuals at risk (primarily IVDA), and those subject to secondary spread of the virus, such as children. Persuasion, coupled with education, has been effective in altering the spread of HIV among practicing male homosexuals, but the minimal efforts at outreach among IVDA have had little apparent effect. It is apparent that educational efforts to limit the spread of HIV will have to begin in childhood, and should be coupled with early efforts to provide education and persuasion with respect to drug abuse in the schools, and among religious and other social groups. The breath and scope of this epidemic is unprecedented, and providing care for individuals with actual AIDS is only part of the problem. Prevention, as well as management for individuals who have tested HIV antibody positive but who are not ill, or have ARC rather than AIDS, leads to numbers of patients and complexity that is unprecedented. Yet this challenge must be confronted if we are to begin effectively to treat the illness and control the epidemic. Adequate health care management for this problem will require more than dollars. It will require a degree of coordination that currently does not exist in our health care system. It is also apparent that any approach that is developed to address the HIV outbreak will need to be coordinated internally with an educational program, focusing on risk factors leading to the spread of the epidemic. The article by Thomas A. Farley et al in this issue of *Connecticut Medicine*[16] evaluates an educational process relative to HRD in high schools. One could argue that to have a major impact through education, we will have to begin a dialogue with our children long before they reach high school.[3]

By any estimate, the cost of early HIV intervention will be expensive (perhaps $5 billion per year), and the options for payment will have to be worked out.[17,18] It seems possible that any payment scheme arranged for HPP could become a paradigm for the larger issue of how to manage finances for the health care of the nation. It has been suggested that a program of universal, government health insurance be mandated.[19,20] More recently, Arnold Relman has suggested that we should have a prepaid system subsidized by government or business, that contracts with nonprofit HMOs managed jointly by physicians and members. He would emphasize care provided by primary care providers, limit the number of specialists, mount a national program of technology assessment and accountability, and restructure our health care systems as a social service managed by nonentrepreneurial professionals.[21] The recommendations of the Pepper Commission seem only somewhat less extreme, and would build on the current system, rejecting full national health insurance, or a system of extended medicaid, with vouchers for those with low incomes.[22]

Ultimately, paying for HRD treatment will have to be fit into the scheme of our national health care priorities and conscience. We who are actively involved in patient care must seize this opportunity to drive policy toward early intervention, education, and appropriate, humane care. While there are many participants (HMOs, hospitals, insurance companies, the federal and state governments, economists, lawyers, politicians, and special interest groups), we are in an excellent position to speak in favor of this rational approach, and to serve as advocates for our patients. The alternative to is to allow purely political and financial considerations to determine how and what care will be provided to whom.

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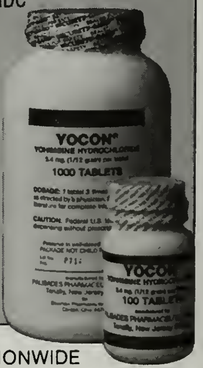

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1918 Flu Epidemic in Hartford, Connecticut

JOHN K. SPRINGER

EPIDEMIOLOGY, the study of diseases, their incidence distribution, transmission, and control, is of greater interest now than when it was a required graduate course in hospital administration in the late 1950s at the University of Michigan. Hearing from retired city health officers about the scientific discoveries that reduced death rates from smallpox, typhoid, diphtheria, and bubonic plague was of only casual interest to vigorous youth eager to start our health care management careers. In the post-World War II era the Congress funneled money into the National Institutes of Health, the National Cancer Institute, and the Department of Health, Education, and Welfare as though frantic investments in basic science research, clinical research, and in upgrading physical plants of medical schools and hospitals would enable the United States with its combined public and private attack on death and disease to succeed finally in bringing us to the point that, as one British neurosurgeon described it, "You Yanks regard death as an option."

After all, in 1960 polio was being eliminated, smallpox was a third-world disease, penicillin and antibiotics were the miracle drugs which could cure the previously often fatal cases of pneumonia and septicemia. Most babies were delivered in hospitals with a resulting rapid decline in the neonatal mortality rate and since the 1940s we rarely heard of a mother "dying in childbirth."

Ralph Reinfrank, M.D., past chief of medicine at Hartford Hospital, once commented that Joseph Stalin, one of the 20th century's leading philosophers, had said that "one death is a tragedy . . . a million deaths is a statistic." So learning about the pandemic or worldwide epidemic of influenza that killed 20,000,000 people in 1918-19, or the bubonic plague which may have claimed 60,000,000 lives in 1347-48, was history, but with Western science pushing back the frontiers and improving life expectancy, it seemed time to get on with the issues that really counted.

Universities like the University of Michigan were still training public health officials (they were affectionately known as privy sniffers) to look after the major public health issues, such as venereal disease, and meanwhile Middle America would be protected by new and renovated hospitals plus additional doctors and nurses being trained in increasing numbers throughout the country. Acid rain, pollution, and the AIDS epidemic have served to restore my humility and great appreciation for those who work for the public health.

The report of the State Department of Health through the years 1918-20 stated that the great pandemic of influenza spread from Europe to this country in 1918, and Connecticut, because of its location on the Atlantic coast, was one of the first states stricken by the disease. It was then known as "Spanish influenza" and it appeared first in Massachusetts on the Commonwealth Pier in Boston, late in August 1918. The early cases in Connecticut were United States Navy personnel reported hospitalized 1 September 1918 at the Naval Hospital in New London.[1] The Connecticut State Department of Health designated influenza as a "reportable disease" on 12 September 1918 in New London County and for the entire state of Connecticut on 18 September 1918. The Health Department report describes the disease symptoms as "sudden onset, severe headache, chills, fever, general weakness, often prostration, pains in the back, sneezing." A friend in West Hartford, now deceased, named Beatrice Springer Wilde, told me of an incident that occurred while she was working in the Hartford Hospital emergency room as an R.N. in 1918. Four Yale students arrived by train at the Hartford station and felt sufficiently ill to debark in Hartford rather than continue to their destination. They walked to the Hartford Hospital emergency room and by the next day all four had died of influenza. The epidemic peaked in Connecticut in October and November 1918 and January and February 1919. In 1918 there were 105,056 reported flu cases and 7,602 deaths. In 1919 there were 10,064 cases reported and 1,583 deaths. There were also 2,991 deaths

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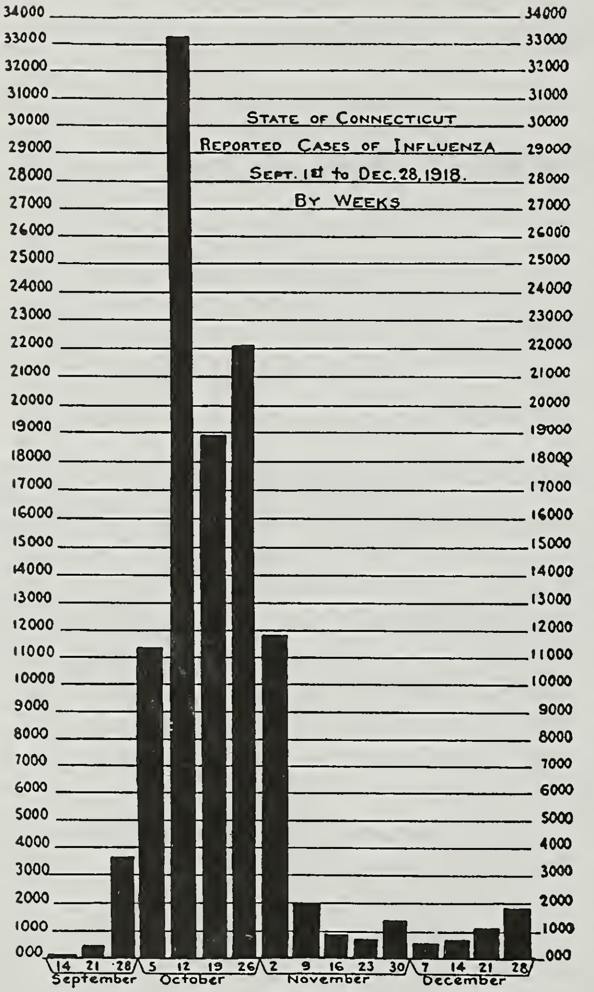

Figure 1
Reported Cases of Influenza, Sept. 1 to Dec. 28, 1918 (Reprinted from the Report of the State Department of Health, 1918-19, Hartford)

from pneumonia in 1918 and 1,632 in 1919.[2] Public Health officials as well as hospital and medical resources were frantically trying to deal with the sick and dying while anticipating ways to stem the epidemic by closing public buildings, limiting travel whenever possible, and quarantining households and institutions where influenza was prevalent.

Pamphlets issued by city health departments warned that in order to prevent influenza individuals were

1. not to inhale any person's breath
2. to avoid persons who cough and sneeze
3. not to visit close and poorly ventilated places
4. to keep warm and dry
5. to remove wet clothes on arriving home
6. not to use towels, cups, and things others have used
7. to protect others by using a handkerchief when coughing or sneezing
8. to clean one's teeth daily
9. not to spit on the floor[3]

Although officials were certain that reporting of the disease was incomplete it was clear that the epidemic moved through Connecticut from east to west, and officials could pinpoint the peak of the epidemic to the day, county by county, between 2 October and 25 October 1918. Hartford County felt the peak of the epidemic on 15 October. The Hartford Hospital Annual Report for 1919 read in part:

> ### THE INFLUENZA EPIDEMIC
>
> We feel that anything affecting the Hospital and the Community at large to such a degree as did the Influenza Epidemic during the first three months of this fiscal year should, for the benefit of those who come after us, appear in our official records.
>
> During September we received many requests for nurses and doctors from the City of Boston and from the Army Medical Corps at Camp Devens. It was difficult for us to understand the urgency of these requests, but we sent some of our available nurses to Boston and many to Camp Devens, where they rendered valuable service. By the first week in October we could

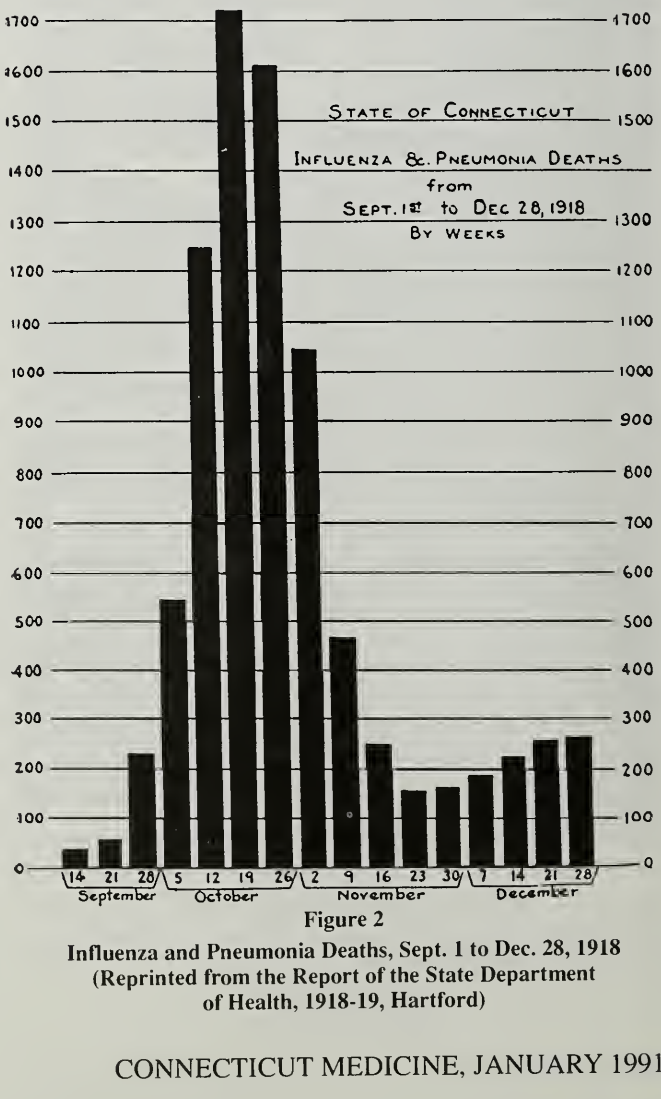

Figure 2
Influenza and Pneumonia Deaths, Sept. 1 to Dec. 28, 1918 (Reprinted from the Report of the State Department of Health, 1918-19, Hartford)

appreciate the urgency of the great demand throughout New England for additional nurses and doctors. Hartford was in the throes of the worst epidemic in the history of the city.

During the days that followed great numbers of ambulatory cases were refused admission, as those only who were desperately ill could be provided for. By the end of the month the Department of Health reported that one-fourth of the entire population of the city had come down with the disease. The demand for hospital accommodations increased so rapidly that we closed all of our surgical wards but two, one for men and boys and one for women and children, converting all available space into emergency wards for the care of these cases. During the months of October and November only emergency operations were performed.

In order to furnish nursing and medical attention to the vast number that were unable to obtain hospital accommodations, the authorities of the city requested us to open the Hartford Golf Club as an emergency hospital. With the permission of the Executive Committee this was done on October 17th. These cases were visited daily by our attending physicians and a member of the house staff was assigned to this duty and remained at the Club. An appeal was made from the different pulpits in the city for volunteers to care for these cases. The response was so generous that the work at the Golf Club was carried on by them with the exception of one physician, one clerk and the divided attention of your superintendent from the hospital force.

During the epidemic the Hospital cared for 1,733 of these cases with a mortality of 17.8%. Too much cannot be said for the loyalty and devotion of every employee in the institution during this trying period. Every precaution was exercised to prevent the spread of the disease in the Hospital, and out of more than 400 doctors, nurses and employees, we lost one nurse and one employee.

Of the 9,000 patients treated during the year 724 died, a mortality of 8.4%. This includes the influenza cases. Deducting the 1,773 influenza cases with the 309 deaths which occurred from this cause, we have 7,267 treated, with 415 deaths, a mortality of 5.7%; 135 of these 415 died within 48 hours after admission. Deducting the 135 moribund cases from the 415 leaves a mortality of 3.8%.[4]

The Public Health reporting of deaths included deaths from influenza and all forms of pneumonia since many with the flu ultimately succumbed to pneumonia. For the City of Hartford the number of deaths reported for the four weeks in October 1918 were 64, 141, 206, and 139. In November 1918 the number diminished per week to 96, 42, 24, 17, and 24.[5]

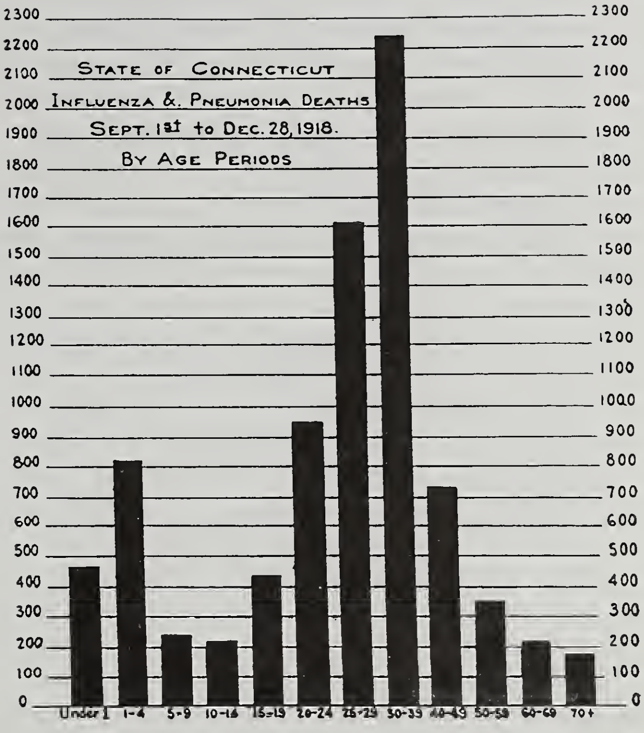

Figure 3
Influenza and Pneumonia Deaths by Age Periods

Children under the age of five and adults from the age of 25 to 39 were particularly hard-hit by fatalities in the 1918 epidemic. City and state health departments issued bulletins daily and in Hartford on 3 October 1918, a bulletin read in part:

> Local health authorities are asking for advice regarding closing of schools during the present epidemic of influenza. Our instructions are that the policy of this department is that schools should not be closed as experience in nearly all epidemics has shown that pupils are safer in a well ventilated school and under the observation of teachers than when schools are closed and the children allowed to intermingle in homes and on the streets. We advise that teachers be instructed to observe each pupil closely for the first sign of a cold and should any occur that the child be sent home immediately and the name and address of the pupil submitted to the health officer by the school authorities. We especially urge that school teachers exercise good judgment in trying to allay undue fear on the part of pupils and the pupil's parents. Perhaps short talks might be

> given by the teachers to their charges stating that "anyone with symptoms of a cold should go to bed immediately and not wait until tomorrow. Take a laxative. Drink much plain water. Have plenty of fresh air in the room. Send for a doctor and stay in bed at least forty-eight hours after all symptoms subsided.[6]

City health officers were also warned on 5 October 1918 that

> . . . through the state Council of Defense, the State Department of Health is sending notices to theater owners and managers stating that the policy of this department is not to recommend the closing of theaters because of the epidemic of influenza unless local conditions warrant it, provided the owners or managers pay special attention to ventilation and that they throw on the screen at least three times during each performance slides to read as follows: (1) "The health authorities will close this theater unless spitting, coughing or sneezing is omitted during performances." To be followed immediately by (2) "Sneezing and coughing in this theater may spread influenza. Be fair and stay home if you have a cold." It was followed by (3) "If you have a cold retire now. Do not endanger the health of others and save yourself embarrassment." If not withstanding these slides, sneezing or coughing occurs, the performance is stopped and the following slide is to be used: "The person sneezing or coughing will please retire now in the interest of the health of those sitting near him!"[7]

Health care manpower (physicians and nurses) had been drastically depleted as a result of the World War I activities in Europe since the epidemic began about six weeks prior to the Armistice on 11 November 1918. The Department of Health of the state placed urgent calls for medical and nursing personnel. Graduate nurses were guaranteed payment of $28.00 per week plus expenses and trained nurse assistant s $15.00 per week and upward plus expenses.

The editors of *The Hartford Courant,* beginning in late September through October 1918, had many page one articles regarding the flu epidemic, though 90% of the news was of the allies final push through Europe and reports of combat casualities.

- The *Courant* on 5 October 1918 reported 12,975 new flu cases among soldiers in U.S. camps. Boston closed some saloons (legislation for prohibition was being drafted at this time) and the Commonwealth of Massachusetts placed an urgent plea for physicians and nurses from out-of-state to help with their influenza emergency.
- John T. Black, M.D., the Commissioner of Health of Connecticut, on the same date urged the physicians and nurses to stay in Connecticut in anticipation of the epidemic.
- 6 October 1918, 17,303 new cases in the army camps were reported.
- On the same date a headline, "Is Gillette Building a Castle on the River?"
- 8 October 1918, Red Cross mobilized volunteer nurses and some schools and theaters were closed.
- 9 October 1918, 357 new grippe cases in New Britain, and Miss Julia Spring volunteered her 10-room house on Main Street in New Britain as an emergency hospital (Stackpole, Moore, and Tryon were advertising union suits at $3.00 and G. Fox had luxury fur coats ranging in price from $110 to $389).

The obituary pages were filled with the names of people from 20 years of age to the late 40s who had died of flu or pneumonia. The clergy were urged by the State Health Department to keep funeral services short to minimize exposure of individuals in the congregation. It is difficult to imagine the near hysteria that must have prevailed as two, three, and four family members succumbed to this unseen enemy.

The *Courant* of 9 October 1918 reported a man who blocked the automobile of a local M.D. demanding that the physician visit his daughter. The physician replied that he had more calls than he could possibly attend and urged the man to get another physician. The frantic father stood in front of the car refusing to allow the chauffer to move; a large crowd gathered. Mayor Quigley of New Britain arrived and took the man into the New Britain Club and arranged for the services of a Dr. Blackledge. Dr. Blackledge had an introductory piece in the *Courant* on 9 October stating that he was from Boston, urged people who had family members severely ill with the flu to get medical attention, and that he would be available for emergencies.

As the epidemic crested those with public health responsibilities seemed, from the press accounts, to have made difficult decisions in an effort to minimize the effect of the epidemic, and appeared to have kept the public informed by the press and public health bulletins. One of these issued by the Connecticut State Council of Defense was headed, "Help Fight the Grippe, Kaiser Wilhelm's Ally." Observations in the press ranged from notations that this disease was passed by "germs" and that there was nothing new, simply the old grippe like the grippe epidemic of 1889-90.

The *Courant* dated 20 October 1918 featured an article on Noah Webster who as a nonphysician had written about a flu epidemic in 1647. During the peak of the epidemic in Connecticut and Hartford County, public health officials and the health care establishment managed the crisis better than one might have expected. Four thousand doses of a vaccine were provided to the Connecticut Health Department by Dr. Watters of Boston University Medical School and Dr. O'Leary of Tufts College Medical School. This vaccine was distributed in institutions and industrial plants where its effects could be studied and its value determined. There were no results reported. Even in a crisis the Food and Drug Administration today would surely deny such rapid distribution of experimental vaccines. The State Department of Health was supported by the State Council of Defense which appears to have been an equivalent of the civil defense network established during World War II. The mortality figures are staggering. Deaths due to influenza and pneumonia in the State of Connecticut rose from 40 per week in mid-September to more than 1,700 during the week of 19 October and more than 1,600 during the week of 26 October.

In mid-October there was a noticeable decline in reported cases. On 18 October, Dr. C.P. Botsford of Hartford Hospital reported that there were only 33 new cases against 41 on the previous day, and there were seven empty beds at the hospital compared to just three the day before. The pupil absentee rate in the Hartford schools began to improve from a peak of 37%, and, although four weeks later the incidence of flu and pneumonia had fallen to normal levels, one can be sure that the human tragedy inflicted by the epidemic had a moderating effect on the celebration of the Armistice on 11 November 1918. Every family in Connecticut must have been touched directly or indirectly by this scourge.

The public health officials and the medical establishment following the epidemic proceeded to study, analyze, and deduce what they could from this tragedy in order to be better prepared in the future. One study by Dr. James Frederick Rogers of New Haven was done in cooperation with the Yale Laboratory of Public Health and was printed in the proceedings of the *Connecticut State Medical Society,* 1919. Death rates were compared for small vs large cities, and were analyzed according to temperature ranges, population density, transportation lines, and industry. Dr. Rogers reported, "There is a striking dissimilarity as to height of the curves (and therefore of the total death rate for the eight weeks) in manufacturing, mixed manufacturing and agriculture and strictly rural communities, the first having the highest and the last the lowest death rate, the mixed population falling between. All towns untouched by railroads taken together showed a very low death rate." Some retrospective studies indicated that there appeared to be an immune factor carried forward 29 years from the epidemic of 1889-90. Towns with a very high death rate during the 1889 epidemic had a low rate in 1918 and vice versa.

Another observation cited by Dr. Rogers was, "We also know that in the past 30 years the fluctuations of death rates from what was diagnosed as influenza have been accompanied by corresponding fluctuations in the pneumonia rate though evidently few of these cases of pneumonia were recognized as influenza. It is clear that we have not been able to distinguish one from the other. The question arises also whether a common cold (since its cause is unknown) is or is not of the same nature as influenza. We have been in the habit of smiling at the physician who calls most of the acute respiratory infections the grippe, but perhaps he is not always so far wrong as we think."

The Health Commissioner estimated in his report that the monetary loss by death and disability in Connecticut from the influenza was $68,000,000. Appropriations to operate the health department for the year ending 30 June 1920 totaled $148,000 (physicians were paid about $3,000 per year).

The national health care establishment in 1990 has grown to a 600 billion dollar enterprise with nearly half of the money coming from state, local, and federal government. The important message of public health officials continues to be almost a lone voice urging more money to be spent for prevention of disease, while the majority of the dollars are spent on diagnosis and treatment. *The Wall Street Journal* of 22 March 1976 noted that "Dr. John Knowles of the Rockefeller Foundation asserts that many Americans have come to look on sloth, gluttony, alcoholic intemperance, reckless driving, sexual frenzy, and smoking as constitutional rights and they've come to expect government financed cures for all the unhappy consequences."

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1. Report of the State Department of Health, Hartford. 1918-19; p. 271.
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3. Ibid. pp. 275.
4. 64th Annual Report of the Executive Committee of the Hartford Hospital, 30 September 1919; pp. 59-61.
5. Report of the State Department of Health, Hartford, 1918-19; p. 287.
6. Ibid. pp. 298-9.
7. Ibid. p. 299.
8. Ibid. p. 297.

Medicaid Access Endangered

LINDA J. SCHOFIELD, B.S.N., M.P.H. AND PAT SMITH, M.D., M.P.H.

INTRODUCTION—We appreciate this opportunity to address Connecticut physicians in this issue of *Connecticut Medicine* on behalf of the state's Medicaid program. It is only through the services of highly qualified physicians in Connecticut that we can hope to improve the mortality and morbidity statistics of the Medicaid population, statistics which currently describe a health status that lags far behind that of the general population. We hope to forge a close partnership among physicians, clients, and the Medicaid agency, thereby improving access to primary care services and enhancing the health and future of our state's poorest citizens.

THE Connecticut Medicaid program has reached a critical juncture in relation to physician participation. The recent maternal and child health expansion mandates from Congress have increased the eligible Medicaid case load at a time when a slowdown in the Connecticut economy has forced an ever increasing number of individuals into public assistance. At the same time, the federal government has also taken clear steps to improve access to primary care for Medicaid recipients.

In the State of Connecticut, while the number of recipients has increased steadily in recent years, the number of enrolled physicians has *decreased* over the same period, particularly in the primary care specialties. In 1989 the Medicaid population represented about 7% of the total state population, although the figure varied from 4% in the southeastern corner of the state to a high 17% in the north central area (ie, capital region). The number of Medicaid recipients has increased from 212,881 in fiscal year 1988 to 228,108 in the fiscal year 1989. During the same period, the number of obstetricians enrolled in the program decreased from 272 to 171, pediatricians from 380 to 288, and family practitioners from 417 to 286. Although a small percentage of this loss was probably offset by an increased enrollment of group practices during the same period, it was nowhere near enough to make up for the decline in individual physician participation.

The statistics on the declining percentage of physicians enrolled in Medicaid is cause enough for concern. But the fact that a vast number of physicians who *are* enrolled in the Medicaid program participate to a very limited extent makes the situation even more problematic. Studies conducted by the General Accounting Office in 1987 indicated that about one half of all physicians either do not participate in the program or strictly limit the number of Medicaid recipients that they treat. Utilization data from fiscal year 1989 indicate that, with the exception of pediatricians, primary care physicians see less than one Medicaid client per day on average.

The reticence of an increasing number of physicians to treat Medicaid recipients has led to limited access to primary care in the mainstream setting that this program was designed to promote. Furthermore, diminished access has contributed to poorer health status for this segment of our society. We believe that decreased enrollment has resulted from a variety of physician concerns about the Medicaid program, such as low levels of reimbursement, incomplete coverage of medical procedures, inadequate eligibility verification, and ineffective communication between Medicaid and the medical community.

The Department of Income Maintenance has recognized the need to enhance its commitment to "customer service," to include servicing providers, not just clients. In an effort to operationalize this commitment and promote increased physician participation, the Department has embarked on an action plan to ensure active participation of all physicians already in the program, to seek the recruitment of newly licensed physicians and to seek the recruitment of other physicians who presently are not participating in Medicaid.

Our plans include:

1. Increasing fees for obstetrical and pediatric services to 90% of statewide average customary charges as captured on Medicaid claims. The fees will be allowed for physicians in pediatrics, obstetrics, and family practice.

LINDA J. SCHOFIELD, B.S.N., M.P.H., is Director of Connecticut's Medicaid program, and PAT SMITH, M.D., M.P.H., is its Medical Director.

2. Streamlining the claim processing procedure to decrease prior authorization requirements to avoid unnecessary paperwork and delays. Indeed, the Medicaid Management Information System (MMIS) has achieved an enviable standard in claims processing; 85.5% of all claims adjudicated on their first pass through the system. The primary causes of claim failure continue to be confusion about client eligibility and coding errors.
3. Expanding the physician fee schedule to include coverage of virtually all CPT codes permitted under existing policy. This will eliminate claims denied in cases where physicians bill and the code is not now on our fee schedule.
4. Improving communications with the medical community. We held an advisory meeting with a number of physicians to identify and prioritize actions for improving our written communications. Beginning this January, we will be providing customer service training for central office staff to enhance their interpersonal skills, telephone procedures, and conflict resolution strategies. The training, will be ongoing.

In addition, as resources become available, the Departments hopes to develop and issue the following:

1. A periodic newsletter to physicians statewide to update them with policy changes as well as provider-related information. This newsletter will be an example of what we hope will be an ongoing partnership with your professional organizations in that effort.
2. A brochure to provide newly licensed physicians information about the Medicaid program and the Electronic Data Systems, contact personnel phone numbers, etc.
3. A brochure for clients regarding coverage policies and limitations.

Medicaid is at a critical state in its history. The Department of Income Maintenance is committed to providing medical assistance to a growing population in an era of fiscal constraint while attempting to address the valid concerns of the medical community. We want to be partners with you in this endeavor; to collaborate with you to assure that our mutual clients have access to quality medical care and that our participating physicians are enabled to provide such care with adequate reimbursement and administrative assistance from the Department.

If you are an enrolled and active provider already, we thank you. If are not enrolled or not active, we would like to encourage you to enroll and to see our clients. If you would like more information, please contact the Department's Provider Relations Unit at 566-3293, or contact the Provider Services and Communications Unit at Electronic Data Systems at 674-1310 or 1-800-842-8440.

New CSMS Health Awareness Packets: How to Order

Our new CSMS informational packets containing eight colorful health awareness pamphlets have just been published, with an advance mailing going to all CSMS members. Among the health promotion titles relating to risks of smoking, alcohol, STD's and poor diet, there are also titles like Health Care Costs and Patient-Physician Teamwork. These are written from the physician's point of view, a perspective that the public rarely ever hears.

Reasonable numbers of these new CSMS pamphlets are available without cost to CSMS physicians to pass on to their patients, or to local community opinion leaders. The Spanish version of the pamphlets, soon to be available, may also be ordered from CSMS now.

Part of our 1991 Health Promotion Project is to supply these packets also to legislators, other government leaders, public health agencies, schools, libraries, employers, unions, new media and service agencies. Watch for our CSMS ad in February's *Connecticut* magazine.

To CSMS: PLEASE SEND US CSMS HEALTH AWARENESS PACKETS ASAP:

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____, M.D.

(Please PRINT your name clearly here, and mail to CSMS, 160 St. Ronan Street, New Haven, CT 06511)

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Deep to the Skin

E. TREMAIN BRADLEY, M.D.

E*XPOSURE:* to see through the window you have to pull back the curtains.

The edges of an incision or wound are living tissue which suffers when crushed, eg, squeezed by thumb forceps. One blade of a toothed pick-up however can be used to lift or ease back. Pulling on an untied, clamped single stitch gives excellent lateral retraction. The point of a curved needle can momentarily lift for increased visibility. If a skin-hook is not available, a clamp on the point of a curved needle makes the eye a useful substitute.

Deeper inside—it is helpful to leave the first retractor in place until a second or substitute retractor is positioned.

Dissection: when undermining skin flaps, as in mastectomy, we hold the skin taught with the edge elevated to keep the surface flat, using a method described above or holding with a pad at the skin edge. The natural plane thus demonstrated is opened up with a sweeping motion of the scalpel, keeping the back of the blade loosely against the under side of the skin to avoid button-holing. When more resistant fibrous bands are encountered, they are put on stretch and divided by "pressure" with the blade, not by a sweeping cut.

In blunt dissection near a vein I use the curved part of the clamp blade, keeping the point away so as to avoid tearing or puncturing. One belly of the clamp lies against the vein while the other pushes the soft tissues away at right angles. When the sheath of the vein is to be removed, dissection is carried lengthwise, care being taken to tie and cut the tiny tributaries, not tear them. I like to do this to the axillary vein as I believe it reduces the chances of spasm, constriction, thrombosis, and arm edema.

When the long thoracic or any nerve is encountered, a tooth forceps gently held can be used to pick it up, retract it, all without traumatization.

A tumor is to be removed, but has to be freed from its surrounding tissues. Ideally if it is loose enough it is held with gauze to keep it from slipping. Yes, it may be maneuvered by a towel clip or a suture, though the risk of spilling tumor cells must be considered here. As it becomes freer, a loop retractor (for smaller tumors) or Dever (for larger) is useful at times for further atraumatic dissection, but particularly for lifting it out of the wound.

Closure: vertical incisions through the rectus sheath cut across the transverse fibres. Since single interrupted sutures will tend to slide between these fibres, I use mattress sutures or figure-of-eights, both of which bind across the cut fibres. Transverse incisions conversely are more strongly closed with interrupted sutures or also with figure-of-eights.

When there was a large gaping wound and the tissue structure was fragile, Dr. Fred Amendola ran a loop of heavy nonabsorbable material in and out all the way around, two or more centimeters from the edges, both ends being brought out and loosely clamped at one end of the wound. He then placed sutures across, including the loop on each side, all sutures being clamped. While the loop was being pulled up snug (not too tight) and then tied, all the other sutures were also pulled up tight, and gradually tied. This provided satisfactory closure of a recalcitrant defect without having the sutures cut through debilitated tissue. I have used the "Amendola loop" many times with great success.

Some wounds are left open on purpose and packing is inserted. If the packing is in a roll, a small probe or wide-open safety pin passed through the center allows the packing to unroll as it is stuffed into the wound. Another method I have used, especially if the packing is to be soaked in some solution, is to place it in a small round, high-rimmed basin from which it unrolls easily.

E. TREMAIN BRADLEY, M.D., solo practice of general surgery, retired to Norfolk.

STATE OF CONNECTICUT
COMMISSION ON VICTIM SERVICES

AN OPEN LETTER TO PHYSICIANS

FROM COMMISSIONER S. STEVEN WOLFSON, M.D.

Commission Members:

Francis M. Dooley, Esq.
Chairman
S. Steven Wolfson, M.D.
W. Lee Smith

John C. Ford
Administrator

December 1990

Last year more than 16,000 Connecticut residents became the victims of violent crime. Less than 2% took advantage of the free services available to them through Victim Services. And less than 10% of those were referred by a physician.

Physicians may be the first and only source of professional care and attention that victims ever seek. We ask for your support in guiding those patients to the full host of services they need and deserve, by making referrals to Victim Services.

Our court based Victim Advocates can support victims through a trying court process. The Victim Services Helpline gives victims information on a host of other free resources. And through our Compensation Program, victims can apply for monetary compensation for the effects of a violent crime. We cover expenses such as medical bills and lost wages that are not picked up by an insurance carrier.

When a patient is aware of the benefits available through Victim Services, everyone wins. We ask for your cooperation in referring patients who have suffered injury from a crime—homicide, assault, drunk driving, and family violence. As part of our comprehensive public awareness effort, we can provide free brochures which help explain our services. We also have posters available which display our helpline number (1-800-822-VICT).

Feel free to contact me at any time if you would like to receive brochures or posters or if you have questions regarding Victim Services' programs. Thank you for your consideration.

Sincerely,

S. Steven Wolfson M.D.

S. Steven Wolfson, M.D.
Hartford

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Editorial

Guest Editorial

Elimination of Preventable Blindness from Diabetes by the Year 2000

IN no field of medicine is continuing medical education of physicians more critical than in the management of diabetes. Twelve million Americans have diabetes mellitus, and the disease knows no medical specialty boundaries. In addition to being a major cause of morbidity from multisystem complications, such as renal failure, neuropathy, and cardiovascular disease, diabetes is the leading cause of blindness among working-age Americans. It accounts for at least 12% of new cases of blindness every year in the United States. Diabetic retinopathy is often asymptomatic at its most treatable stage, emphasizing the importance of early diagnosis of this retinal complication. New information about diabetes emerges almost monthly as published in some specialty journal, making it mandatory for us to find better ways to "keep up" with advances in this field—the stakes are simply too high to do otherwise.

In response to the increasing importance of the overall problem of diabetes and diabetic retinopathy, and the availability of improved treatment regimens defined by published clinical trials result, the American Academy of Ophthalmology (AAO) has embarked on a long-term education project designed to more rapidly translate research findings to medical benefits for the American public. The new project, "Elimination of Preventable Blindness from Diabetes by the Year 2000" or "Diabetes 2000" was announced by the AAO's 1989 Annual Meeting.

Facts About Diabetic Retinopathy

The majority of diabetic patients have non-insulin-dependent diabetes mellitus (NIDDM, Type II). Usually diagnosed after age 40, Type II diabetic patients may or may not be treated with insulin. Fewer patients have insulin-dependent diabetes mellitus (IDDM, Type I), which is usually diagnosed before age 30. Type I diabetics experience more frequent and severe ocular complications. After five years, 23% of Type I diabetic patients have retinopathy; after 10 years, almost 60% have retinopathy; and after 15 years, 80% have it. Proliferative diabetic retinopathy (PDR), the most threatening form of retinopathy, is present in 25% of Type I patients after 15 years and often remains asymptomatic well beyond the optimal stage for treatment.

An estimated 700,000 Americans have proliferative diabetic retinopathy and 500,000 have macular edema. The annual projected incidence of new cases of PDR and macular edema is 65,000 and 75,000, respectively. About 8,000 new cases of blindness a year in the United States are caused by complications from diabetes.

What Can Be Done

"Diabetes 2000" provides the means to close the gap between advances in research and changes in treatment patterns. While most physicians are aware of diabetic retinopathy, the AAO's goal now is to focus attention on the importance of early diagnosis and timely treatment of diabetic retinopathy based on the important advances of the last five to 10 years. For example, we now know that timely laser photocoagulation surgery can reduce the risk of visual loss from proliferative diabetic retinopathy by at least 50%. We know that timely laser photocoagulation surgery of diabetic macular edema can reduce the risk of moderate visual loss by 50%. We know that vitrectomy surgery can restore useful vision to some diabetic patients who have advanced diabetic retinopathy.

Effective Partnerships are Needed

As the working title implies, "Diabetes 2000" will be a long-term project aimed at a specific disease: diabetic retinopathy and its complications. Several phases are anticipated. Providing the latest research findings to ophthalmologists and other physicians who care for those patients is the first priority, followed by patient and public information. Initially, new advances and treatment guidelines for the medical and surgical treatment of diabetic eye disease will be emphasized through continuing education of ophthalmologists, other physicians, allied health professionals, residents, medical students, and specialists in diabetes-related education. In later phases, educational programs for diabetic patients and the public will be developed. Ultimately, improved eye care of diabetic patients is expected as a result of closer collaboration between the physician primarily responsible for the care of the patient's systemic illness, the patient, and the ophthalmologist. Since diabetic patients can be asymptomatic despite significant progression of diabetic retinopathy, the importance of a renewed and improved partnership between the ophthalmologist and the patient's primary physician is critical.

Because of the ambitious goal and long time frame, many other medical organizations and public groups are involved in Diabetes 2000. Representatives from various medical specialties, government agencies, and other organizations devoted to problems of the diabetic patient have been invited to participate. Since diabetes is a complex, multisystem disease whose overall management is the responsibility of physicians other than ophthalmologists, "Diabetes 2000" will stress involvement of other physicians and medical specialty organizations in the planning and implementation of the project. The importance of finding ways to develop effective partnerships between the patient's primary physician, the ophthalmologist, and the patient in the management of diabetic eye disease is a major goal. Another important aspect of the project is the identification and promotion of existing diabetes eye health programs around the country, such as the Center for Disease Control (CDC) Diabetes Translation Project. The AAO will encourage ophthalmologists to participate in national, regional, and local programs that are already in operation, as sponsored by such organizations as the American Diabetes Association, the Juvenile Diabetes Foundation, Lions Clubs, and others.

Connecticut Ophthalmologists are Participating

Educational materials are being developed and demonstration projects are underway in some states to encourage ophthalmologists and other physicians to participate in continuing education programs concerned with the overall management of diabetic retinopathy. A Preferred Practice Pattern on diabetic retinopathy is available through the offices of the American Academy of Ophthalmology (415-561-8500). This document provides the latest information concerning the management of diabetic retinopathy. The Connecticut Society of Eye Physicians is actively involved in this national initiative. Ophthalmologists in Connecticut are eager to help develop the necessary educational and service programs that will achieve this goal.

Diabetes 2000 will parallel a major diabetic retinopathy public information campaign recently announced by the National Eye Institute. The NEI's National Eye Health Education Program (NEHEP), which targets both diabetic retinopathy and glaucoma, is fashioned along the lines of earlier federal initiatives against smoking and high blood pressure.

By continuously updating our medical knowledge and skills related to this multisystem disorder, and by forging partnerships between physicians in the effective and efficient management of diabetic patients, we have a unique and important opportunity: we can reduce preventable blindness from diabetes by the year 2000.

Andrew J. Levada, M.D.
President
Connecticut Society of Eye Physicians

Ronald E. Smith, M.D.
AAO Secretary for Continuing Education
Diabetes 2000 National Project Director

Arnall Patz, M.D.
Past President, AAO
Diabetes 2000 National Chairperson

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Medicaid in Crisis

This issue of *Connecticut Medicine* contains an extraordinary article by Ms. Linda Schofield, the Director of Connecticut's Medicaid program, and Dr. Pat Smith, its Medical Director and a member of our CSMS Committee on Public Health. The article is a documentary commitment to improve the operations and viability of the program, so that more primary physicians may increase their activity in treating Medicaid clients. Participation levels may have dropped to levels that compromise the routine care of the poor.

Now that recessionary conditions are increasing both the health care needs and the numbers of the poor, more active physician participation is even more critical to the health of the needy. It is not too much to ask. There are only about 250,000 on the Medicaid rolls. If *every* active primary physician scheduled only one Medicaid patient per day each patient could get three primary visits per year, on average.

In an earlier day, this medical obligation was met by taking one's weekly turn on the hospital wards and clinics in the city, and by accepting eggs or apples in lieu of dollars in the country. This ancient tradition gave inarguable credibility to the eleemosynary image of the beloved family doctor. How times have changed! The charity wards are gone, and so are the hospital clinics for the poor. In place of what was a two-tier system of care is government-funded access to a single-tier system—the best, supposedly, for everyone.

But it's not working that way for too many of the poor and near-poor. If it *is* working for some others, it is thanks to the devoted work of a rather small number of heavily burdened doctors who do far more than their share of Medicaid and *pro bono* work.

Certainly, the Medicaid system has its shortcomings. No one is more painfully aware of them than its participating physicians, with the sole exception of the poor themselves, whose mortality and morbidity are worse for the same diseases that their more affluent compatriots recover from routinely. One's own dissatisfaction with the way the system works or doesn't work, even if legitimate, need not result in avoiding active participation in the program. It is the *only* program the needy have. Our Medicaid officials are also aware of these shortcomings, and their article documents their good-faith commitment to respond to physician input with action, even in the face of current fiscal constraints.

A year ago, the Society's House of Delegates adopted without dissent a resolution presented by Dr. Eugene Corley of Bridgeport with the support of the Fairfield County Medical Association. This resolution reaffirmed the CSMS policy to encourage *all* Connecticut physicians to treat Medicaid beneficiaries, and it is hoped that 1990 statistics will reflect some increase in activity and participation. If you have concerns or difficulties concerning Medicaid, try contacting the Society's Liaison Committee with the Department of Income Maintenance, chaired by Dr. Neil Brooks of Rockville.

In the past year, the American Medical Association and the CSMS have supported the expansion of Medicaid to cover *more* of the poor and the uninsured near-poor as part of organized medicine's "Health Access America" program. It is a better alternative than British-style nationalized health system proposals, if independent physicians maintain the responsible traditions of their calling. One such medical tradition refers to caring for the needy not as a burden, but as a privilege entrusted to the healing art. May we all become worthy of it.

Mehdi S. Eslami, M.D.
President

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Medical/Surgical Supplies	General Medical Corporation	800-444-4628
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For additional information about the group purchasing program, please call Geoffrey T. Fromme, 265-7611, X-314.

Education and Disease Prevention

ROBERT U. MASSEY, M.D.

THIS issue of *Connecticut Medicine* has five articles on the subject of the acquired immunodeficiency syndrome (AIDS), four submitted quite spontaneously without our planning a special issue; David Johnson's article was written after he had reviewed one of these papers. The biology of the disease and of the human immunodeficiency virus (HIV) is not the subject of these papers, but rather the broad scope of AIDS epidemiology and the public response to this most recent of our epidemic diseases.

As with each epidemic in history, AIDS, like influenza, cholera, syphilis, and the plague, is unique. Lessons learned, or rather the experience, in one epidemic apply only imperfectly to those that follow; each has a medical and social history dependent not only upon its peculiar biology but also the characteristics of its time and place. Perhaps few natural events have such profound effects upon human society as epidemics. AIDS is not a big one as epidemics go; compared with the 1918-19 influenza pandemic it is puny—but terribly grave because of its effect on the immune system and its apparent 100% case-fatality rate. In the year 1918 alone in Connecticut there were just under 8,000 deaths from influenza in a population of 1.4 million, a death rate of about 570/100,000, compared with an AIDS death rate in 1989 of about 5/100,000. The case-fatality rate for cholera in 1832 ranged from 47% to 90%, with mortality sometimes estimated as high as 2,000/100,000 population.[1] Cholera and influenza were short-lived, recurrent epidemics of acute disease, but AIDS, like tuberculosis, promises to go on and on, a continuing epidemic of a chronic disease. Annual mortality from tuberculosis was about 500/100,000 in the industrialized world at the beginning of the 19th century, and was half that at the end of the century. By the early 1950s when specific chemotherapy became available, mortality had fallen to 50 or below per 100,000.[2] The reasons for this decline are debatable and complex. Physicians, public health officers, and social historians will give different reasons, and their answers may illuminate but will not clarify the way for controlling AIDS.

For smallpox a vaccine was the answer; the idea of conferring immunity by inoculation or being lucky enough to have a mild case is older than we know; in writing of the plague in Athens (430 B.C.), Thucydides observed:

> Yet is was with those who had recovered from the disease that the sick and the dying found most compassion. These knew what it was from experience, and had now no fear for themselves; for the same man was never attacked twice—never at least fatally.[3]

For cholera and tuberculosis social changes and public health measures counted for more than immunization and treatment, and the same may prove to be true for AIDS. The application of these measures will, however, be different; in 1832 it might have been difficult, even by taking pains, to avoid either tuberculosis or cholera, and in 1918 it was impossible by any deliberate strategy to escape the flu. But, except for newborns of infected mothers and recipients of HIV-positive blood or blood products, anyone determined to do so can avoid AIDS. This is why education is the only public health measure or social strategy that will work, and its effectiveness depends entirely upon individuals taking responsibility for their own lives.

The human immunodeficiency virus has already revealed its kinship to Proteus, only unlike that old deity, may never suffer itself to be chained. Our luck in coming upon a vaccine is hardly likely to be as good as that of Edward Jenner and his cowpox, and curative antiviral therapy has so far been a will-o-the-wisp. In this epidemic, as with cigarette smoking with its annual mortality rivaling that of tuberculosis in the early decades of this century, our task as physicians is the ancient one, to care for, but also to teach, to educate, and to persuade.

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Beyond *Cruzan*: Advancing Legitimate State Interests

JOSEPH M. HEALEY, J.D.

DISAPPOINTMENT over the United States Supreme Court's failure to support the request of the parents of Nancy Cruzan to exercise her right to refuse artificial nutrition and hydration was tempered somewhat by the fact that legal treatment of two controversial issues finally has been clarified. At least five of the justices acknowledged that there is a constitutional basis for the right of a patient to refuse medical treatment. Also, at least five justices concluded that artificial nutrition and hydration should be treated in the same manner as other forms of medical treatment when decisions to withhold or withdraw must be faced. The major remaining issues dividing the majority and minority members of the Court include the circumstances in which a compelling state interest outweighs the patient's right to refuse treatment and the circumstances under which the previously expressed wishes of a now incompetent patient or her surrogate will be legally binding. As introduced in last month's column,[1] the dissenting opinion of Justice Brennan points the way toward a compassionate resolution of these final questions.

There are three situations in which the state's interest in protecting an incompetent patient's rights justifies state involvement in the decision making process: (1) when there is reasonable doubt about the patient's diagnosis and prognosis; (2) when there is reasonable doubt about the patient' wishes; and (3) when there is reasonable doubt about the motivation of the surrogate decision maker.

The patient's diagnosis and prognosis are important starting points in determining what the goals of management are in the specific case, whether there is any efficacious treatment available, and whether the patient's condition falls within the boundaries established by patient or surrogate to determine when treatment should be withheld or withdrawn. Concern about discriminatory undertreatment through the failure to provide appropriate beneficial treatment justifies clarification of the patient's condition as a first step toward evaluating the patient's refusal of treatment. However, in the vast majority of reported cases, sufficient testing had occurred and sufficient time had passed to permit confirmation of the absence of beneficial treatment and of the likelihood that medical technology would prolong the death and not the life of the patient.

At the heart of the modern right to self-determination is the principle that the rights of the patient should not evaporate if the patient is unable to exercise them. Patients should be entitled to have previously expressed wishes followed or to have a surrogate decision maker make choices for them consistent with their best interests. If there were reasonable doubt about the patient's wishes or about how they should be applied, there would be a role for the state to protect the patient's rights. But this involvement of the state should not be used to substitute the state's judgment about what is in the patient's best interest for the patient's expressed wishes or the testimony of family and friends. Such actions have the effect of reducing the patient to an abstract symbol, rather than a person whose interests really count.

Third, if the surrogate decision maker recommends a course of action clearly not in the patient's best interest or acts out of self-serving motives to the detriment of the patient, then there is and should be a responsible role for the caregiver and the state to protect the patient's rights. The exercise of decision making power by a surrogate requires placing the patient's interests first and contamination of such a judgment justifies protection of the patient and replacement of the decision maker.

In the *Cruzan* case, none of these justifications existed. There was no question that she was in a persistent vegetative state, with no reasonable likelihood of regaining consciousness and no efficacious treatment available. Her parents, appointed by the probate court as her surrogate decision makers, testified about her wishes and about what they concluded would be in her best interests. There was no evidence of any contaminating influences or suggestions of anything but the highest motivation guiding their decision making process. The patient's and family's wishes should have been followed.

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50 Years Ago

From the *Journal of the Connecticut State Medical Society*

January 1941

Aspects of Medical Defense in England

J.F. FULTON, M.D.,
New Haven, Conn.*

The Author—*B.A. 1921, M.D. 1927, Harvard University; Rhodes Scholar, Oxford, 1921-1923 (B.A. 1923, M.A., Ph.D. 1925). Peter Bent Brigham Hospital Boston, Surgery (under Dr. Harvey Cushing) 1927-28; Fellow, Magdalen College, Oxford, 1928-30; A.M. 1929 (Hon.) Yale; LL.D. 1938 (Hon.) Kenyon College. Sterling Professor of Physiology, Yale University School of Medicine, New Haven, 1930.*

Doctor Fulton has just returned from England where it was his privilege to study first hand the various defense problems.

I. Mechanized Equipment

It is generally conceded that France in 1939 was far better prepared than in 1914, but prepared only for a repetition of the static type of conflict which characterized the first World War. This was true in her medical defense as well as in her defenses on the Maginot Line. She was wholly unprepared, however, for aerial warfare, for the rapid advance of mechanized troops, or for the casualties strewn over many miles of the spearheaded advances of the mechanized columns; a man who was injured and no longer ambulatory was as good as dead.

The British had things somewhat better in hand, with transfusion units on lorries, mobile neurological teams, and certain other motorized first-aid teams. The base hospital equipment and the casualty clearing stations were for the most part on wheels, but even these preparations were of little value in the face of the enemy's swift advance in France and their own rapid retreat during the Battle of Flanders.

In retrospect, the experience in Flanders and at Dunkerque indicates that the British had made a highly significant move in the right direction, and in the light of this experience, they are convinced that more of their medical equipment must be placed on rapidly moving wheels capable of action at a moment's notice; certainly no expeditionary force can safely be sent to the Continent or to any part of the British Empire unless it has mechanized and possibly armoured medical equipment. First-aid units, transfusion units, surgical operating trailers, casualty clearing units and base hospitals must all be conceived and organized on the circus principle.

There has been a strong tendency in this country to organize medical defense on the basis of World War No. I. We tend, in our paper organization, to place huge general hospitals and base hospitals in a certain geographical situations and then like Frenchmen, arrange in our mind's eye to have the theater of military operations at a convenient distance from our paper base hospital. This type of organization and thinking is as outmoded as the paper on which it is drawn. Large base hospitals are a thing of the past; they have a high affinity for bacteria and bombs, and they tend to become, as in the last war, centers of epidemics devastating both to the military and the civil population.

The great principle of military and medical organization operative at present in England, and also among the Axis powers, is dispersion of all forms of equipment, military as well as medical. No large hospital buildings have been constructed by either side; small ward barracks widely distributed are the order of the day. They have cut down mass epidemics and curtailed casualties from bombing raids, and *dispersion* has become also firmly ingrained in the arrangements for troop accommodations, as well as in the plans for the medical services. In these respects we must heed their example, and perhaps also recall that after Japan invaded China her troops within six months had penetrated a distance equal to that from Savannah to Kansas City. We must not lose sight of the fact that a successful invasion attempt would involve the use of rapidly moving columns in which the front line might move several miles in a single day. This likewise would be true, we hope, of any offensive operations we might be called upon to undertake.

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II. Bombing Injuries, Shock and Blood Substitutes

The English have also had to face on their shores the consequences of widespread bombing casualties; they have had, in addition, to organize for a possible invasion attempt. Their experience with bombing injuries is highly important to any program of medical defense, for the casualties are similar to those experienced on naval military craft—the type of injury which we would be the most likely to encounter in the event of military operations, whether of an offensive or defensive character.

In the last war there were many incidental records of individuals found dead in the vicinity of a bursting shell without evidence of external injury. This type of casualty has been alarmingly frequent among the bombing casualties in London, and it has drawn attention to the medical problem of the nature and treatment of such injuries. In addition to many deaths, there have also been numerous instances of individuals who, although surviving primary blast, have experienced profound circulatory collapse and other symptoms associated with traumatic shock.

In an earlier number of this journal, Dr. Weld has reviewed the experimental work of Dr. Zuckerman on blast, and also the clinical observations of Dean, Thomas and Allison, reporting from a Royal Navy Auxiliary Hospital (*Conn. State Med. J.*, October 1940, 4, 603-4). Zuckerman finds that when animals are placed at varying distances from a high explosive, the concussion wave generally kills monkeys, rats, guinea pigs, mice, etc., if within 18 feet of the explosion. Autopsy examination of those who have succumbed gives evidence of injuries to the lungs and to other abdominal viscera and occasional petechial hemorrhages in the brain, but these changes of themselves would scarcely be sufficient to account for death. Some other factor must be involved, and from various lines of evidence it would appear that the animals experienced a circulatory collapse accompanied by varying degrees of cerebral concussion.

Denny-Brown and R. Russell *(J.Physiol.,* in press) have recently found that when the head is given a *sudden acceleration in space* as by a blow with a hammer, circulatory collapse occurs if the blow is severe and accompanied also by symptoms of concussion. This, they believe, is due to temporary disorganization of the autonomic nervous system. They insist that all the symptoms of primary shock may occur following blows restricted to the head alone. The degree of acceleration essential for such symptoms has not yet been measured, but it is obvious that corresponding degrees of acceleration may develop as a result of proximity to a high explosive shell.

Treatment. There has been much discussion concerning the nature of the circulatory collapse seen after air raid casualties. It is accompanied by a slow pulse during the first hours, considerable hemal concentration, general diminution of blood volume, contraction of the spleen and other symptoms indistinguishable from surgical shock. Occasionally patients are encountered who remain in good condition until several hours have elapsed, and who then suddenly experience profound circulatory collapse. Such patients generally have had a crushing injury somewhere in the soft parts of the body, often from falling debris. Only one therapeutic measure has been agreed upon by all who have had experience with such cases, namely, they must have an immediate transfusion, of whole blood, if that is possible, or of one of the blood substitutes.

Blood substitutes. There is no widespread unanimity of feeling at the moment in England concerning the best blood substitute. Blood banks of whole blood were given up soon after the beginning of the present conflict, because it was proved impracticable to store it longer than 2-3 weeks. The Medical Corps of the British Army since that time have been partial to the use of whole plasma, and several units have been developed to prepare plasma in large quantities. Similarly, dried serum has also been prepared and is being used in the field.

There is no doubt that serum dried by the freezing method of Mudd is more readily shipped and handled than any of the liquid substitutes, whole plasma or serum. But an interval of time must inevitably elapse for the serum to go into solution, and preparation of sterile saline often presents difficulties in war conditions. These are the considerations which have caused the British Army to favor a liquid form of blood substitute.

Bombing injuries. In addition to injuries from primary blast, the British have been obliged to contend with all manner of physical injuries resulting from falling debris and from high velocity fragments of shells and bombs. There have also been many instances of severe burns among airplane pilots and naval personnel. The blackout has brought still another category of injury and the hospitals throughout England are filled with the most varied and often bizarre injuries incident to night motor accidents, and also simple collision of ambulatory human beings with one another and with pins, trees and fences; and there have been many broken legs and pelves from falls off curb stones, down stairways and into bomb craters and debris. The only type of injury that is essentially new is that caused by the high velocity (and generally very small) shrapnel fragment. The casement of the bombs used currently by the German Air Force splinters much more extensively and minutely than the bombs of the last war, and an individual may become literally peppered with 100 or more high velocity fragments. They travel at a rate which heats them and insures their sterility, and their velocity is often sufficient to penetrate the skull even though the fragment may have a diameter of less than two millimeters. When striking bone, such fragments generally become deeply embedded but do very little damage. When striking soft parts, however they are likely to cause destruction out of all proportion to their size, *e.g.*, in the larger muscles or in the viscera.

Orr-Trueta immobilization. Open wounds of the extremities and lower trunk are treated routinely in most parts of England by plaster immobilization following thorough debridement. So impressive was the English experience with immobilizaiton at Dunkerque that all those who had any doubt of its effectiveness were quickly won over. Dr. Trueta, who put the procedure to thorough test during the bombing of Barcelona, is now at Oxford working in the Department of Pathology under Professor Howard Florey. He believes that the effectiveness of immobilization lies in paralysis of lymphatic drainage, and he is about to publish his series of impressive experiments which prove conclusively that animals can withstand overwhelming infections if their extremities are immobilized immediately after the microorganisms have been injected; but the animal succumbs from spread of the infection if movement is permitted.

One cannot write of medical defense in England without making some reference to the extraordinary morale encountered on every side—in the armed forces, the civilians, and more especially among patients in the military hospitals; and it is no doubt significant in this connection that there have been surprisingly few instance of war neurosis. Some shattered men broke down after Dunkerque, but these, for the most part, quickly recovered. Those who were slow to respond to ordinary measures of rest and reassurance are said to have been greatly helped by testosterone propionate.

1991 Budget Reconciliation Medicare Changes

Before adjourning on October 30th, the 101st Congress passed legislation important to medicine. Most of it was passed as part of budget reconciliation, unless otherwise noted.

Medicare

The Bush Administration originally proposed Medicare cuts of $5.5 billion. By the time the 1991 budget reconciliation bill was passed, these cuts had been reduced to $3.3 billion. The MEI (Medical Economic Indicator) update was set at 2 percent for primary care services, while the original proposal for balance billing limits was moderated. The floor on prevailing rates was raised from 50 percent to 60 percent and limits on "evaluation and management" services were increased to 140 percent.

Congress rejected proposals to reimburse nonboard-certified physicians 5 percent less than their board-certified colleagues, to impose a $1 charge on claims that are not filed electronically and to implement a new, prior approval program for Medicare carriers to use in reviewing physician services. Congress also rejected efforts by Rep. Peter Stark to require periodic Medicare certification of physicians.

Other provisions of budget reconciliation relating to Medicare include:

* PRO REVIEW OF PATIENT TRANSFER ALLEGATIONS. Congress directed the HHSOIG to use PROs to review alleged hospital dumping violations.

*RBRVS REFINEMENT. HCFA was directed to complete a study on geographic variations under the RBRVS by July 1, 1992.

*LIVING WILLS. Congress decided against requiring physicians to inform their patients about living wills.

*GEOGRAPHIC PAYMENT INEQUITIES. HCFA was required to establish statewide fee schedule areas for Nebraska and Oklahoma.

*MVPS. The MVPS was made prospective and is for FY 91 only, rather than through FY 96.

*PRO NOTICE TO STATE LICENSING BOARDS. The AMA was able to defeat a proposal mandating that PROs furnish copies of initial sanction notices to state licensing boards. Instead, state boards are to be notified of PRO sanctions only after a physician has had notice and a hearing from PRO.

Medicaid

Two provisions to the Medicaid program were passed that are of interest to medicine. The first expands Medicaid to include more low-income children and the "frail elderly."

The second effects the Medicaid prescription drug pricing program. Congress decided against therapeutic substitution and a pharmacist enrichment provision. The agreement puts the onus of Medical cost cutting on prescription drug manufacturers, rather than on physicians, through requirements to provide "best prices" to the Medicaid program. Prior approval programs must provide phone or fax responses within 24 hours. Drug utilization review (DUR) programs are required to use AMA Drug Evaluations, and at least one-third of state DUR boards must be comprised of practicing physicians, up to a maximum of 51 percent.

From the Executive Director's Office

SUMMARY OF PROCEEDINGS
CSMS HOUSE OF DELEGATES—SEMI-ANNUAL MEETING

Ramada Inn, Meriden—November 28, 1990

Reports and Addresses

The House received reports, addresses and/or remarks from the Council, the AMA Delegation, the Executive Director, Connecticut Medical Political Action Committee (COMPAC), Connecticut Medical Insurance Company (CMIC), from M.D. Health Plan, and others. Recommendations and resolutions were also received from the Council, county associations and individual delegates.

Principal Actions Taken

(a) **Report of the Council,** Joseph C. Czarsty, M.D., Oakville. The House voted to accept the report of the Chairman of the Council, which reviewed the activities of the Council since the last meeting of the House of Delegates. Minutes of the interim Council meetings have already been published in *Connecticut Medicine*. Special emphasis was placed on CMIC activities, legislative activities, M.D. Health Plan and the 1991 Budget. The actions taken on the Council's recommendations appear elsewhere in this summary.

(b) **Report of the AMA Delegation,** Stewart J. Petrie, M.D., Derby. The House voted to accept the report of the AMA Delegation. The report contained the principal actions taken at the 1990 Annual Meeting of the AMA House of Delegates, which included information on the fundamental rights of patients and their relationship to physicians, required employer insurance programs, the new Medicare RBRVS physician payment system, and the National Practitioner Data Bank. The AMA House of Delegates considered 295 resolutions and 195 reports.

(c) **Report of the Executive Director,** Mr. Timothy B. Norbeck, New Haven. The House voted to accept the report of the Executive Director which included a discussion of the Deficit Reduction Bill, health care costs, the problems of the uninsured and also a report on the eight pamphlets that are being developed by the CSMS staff for distribution to physicians' offices and their patients, libraries, schools, legislators, business and industry, insurance companies, unions and health fairs. The pamphlets will focus on public health and life style issues which include: Living Smart, AIDS and other STD's, Alcohol Abuse Kills, Smoking—Public Enemy No. 1 and Eating to Live or Living to Eat. The remaining three pamphlets will address health care costs, the patient-physician relationship and the impact of outside forces on the practice of medicine.

(d) **Connecticut Medical Political Action Committee (COMPAC),** Patrick J. Concannon, M.D., Chairman. Dr. Concannon reported that COMPAC contributed to the campaigns of 30 of the 36 successful candidates for the State Senate and 95 of the 151 successful candidates for the House of Representatives. He stressed the importance of all physicians participating in COMPAC so that they can participate in a unified political action both in Hartford and Washington. The House voted to receive the report as information.

(e) **Report on Connecticut Medical Insurance Company (CMIC):** Mehdi S. Eslami, M.D., Chairman of the Connecticut Medical Management Incorporated (CMMI) gave an update of the activities of CMMI. He reported on the rate decreases, risk class reductions, elimination of carrying charge, discontinuance and return of surplus contributions, risk management education and the defendant support program. It was voted to receive the report as information.

(f) **M.D. Health Plan (MDHP):** Vincent J. Catrini, M.D., Middletown, Chairman of the Board of Directors of MDHP, reported that enrollment is 5% over projection and that the Plan has shown a profit for the second consecutive year. He further reported that the $600,000 loan that has been co-signed by the Connecticut State Medical Society has been repaid, thereby releasing CSMS from any obligation.

(g) **Connecticut Peer Review Organization (CPRO):** Edward A. Kamens, M.D., Medical Director of Connecticut Peer Review Organization (CPRO) reported briefly on the activities of CPRO and informed the House that they have been selected again by the Health Care Finance Administration (HCFA) for a pilot program for the evaluation of ambulatory care.

(h) **Legislation:** Howard Wetstone, M.D., Chairman of the CSMS Legislative Committee, reviewed some of the issues that may surface in the 1991 legislative session, which included drunk driving laws, helmet laws, laws to ban smoking, mental health beds, invasion of the physician practice area, etc. He assured the House that the committee would be carefully screening all the bills that were introduced.

(i) **Workmen's Compensation:** Joseph Zeppieri, M.D., New London, reported to the House on the recent symposium on workmen's compensation that was held on October 17, 18, 1990. There were three hundred registrations and four workshops. In attendance were attorneys, insurance representatives, occupational nurses, etc. He stated that this was the third symposium which was held and were all successful beyond expectation. The symposiums are co-sponsored by the Connecticut State Medical Society, New London County Medical Association and the Connecticut Workmen's Compensation Commission. He further reported on his participation in the International Association of Industrial Accidents Boards which he believed to be very beneficial.

(j) **Bylaw Amendment on Delinquency:** It was voted to approve an amendment to the bylaws which removes the penalty of requiring members who were dropped for non-payment of dues to pay two years dues to be reinstated. Prior to this change, members who were dropped had to pay dues for the year in which they were dropped from membership and for the year they were being reinstated.

(k) **1991 Budget:** The House voted to approve the budget for 1991, as prepared and recommended by the Council, and that the dues remain at $300.00.

(l) **Committee on Medicare:** It was voted to approve the recommendation of the Council that the present Ad Hoc Committee on Medicare be disbanded and that a standing committee be established. It was noted that the charge would be to meet on a routine basis with representatives of the Medicare carrier for the purpose of advising the carrier on issues of policy and procedures, and that the committee should meet at least quarterly.

(m) **Resolution on Facilitating the Identification of HIV Infected Patients:** It was voted that the following resolution, which was introduced by the Fairfield County Medical Association, be referred to the CSMS Council with the recommendation that an Ad Hoc Committee be formed by CSMS to be broadly constituted in membership to include representatives from appropriate clinical specialties so that a consensus can be obtained in guiding the legislative committee.

"Resolved, That the Connecticut State Medical Society approach the Connecticut General Assembly to seek a modification of Connecticut's restrictive practice on AIDS testing in order to facilitate the earlier diagnosis and treatment of infected patients."

(n) **Resolution of Disease Prevention Programs:** It was voted not to receive as business of the House a resolution that was introduced too late to be acted on as ordinary business and to refer the resolution to the Council for consideration. The resolution was "That the CSMS promote powerful disease prevention programs in its current direction of wellness support."

AWARDS

CSMS Past Service Awards to Officers and Councilors

Officers

Sultan Ahamed, M.D., Norwich	
Vice Speaker of the House of Delegates	1988-1990
Norman A. Zlotsky, M.D., Rockville	
Councilor-at-Large	1989-1990

Councilors

Fairfield County	
Turpin A. Rose, M.D., Danbury	
Associate Councilor	1985-1988
Councilor	1988-1990
New Haven County	
George A. Bonner, M.D., Guilford	
Associate Councilor	1984-1985
Councilor	1985-1990
Middlesex County	
Herbert A. Kaufmann, M.D., Middletown	
Associate Councilor	1988-1990

RECEPTION

Following adjournment of the meeting a reception was held for the newly elected legislators.

NEW MEMBERS

Members of the Connecticut State Medical Society join in welcoming these new members into a progressive state medical organization. CSMS is dedicated to promoting the science and art of medicine, the protection of the public health, and the betterment of the medical profession. Each new member is encouraged to join with other CSMS members at both the county and state levels in achieving these goals.

FAIRFIELD COUNTY

Joel W. Allen, Fairfield
Michael H. Bar, Stamford
Linda M. Barney, Westport
Paul A. Byrne, Bridgeport
Lawrence T. Chiaramonte, Greenwich
Terry L. Cochran, Greenwich
Steven M. Cohen, Stamford
Sandra T. Congdon, Norwalk
Joseph V. Costanzo, Stamford
Robert T. Deveney, Danbury
Kristina J. Dezielle, Newtown
John F. Downing, Stamford
Howard B. Eison, Wilton
Robin D. Evans, Stamford
David F. Garrell, Fairfield
Eva L. Grunberg, New Canaan
Dudley B. Hall, Bridgeport
William F. Hatton, Norwalk
Sarah B. Joseph, Stamford
Howard B. Kaplan, Danbury
Gary M. Koritzinsky, New Canaan
Kevin K. Lenhart, Bridgeport
Minas Lialios, Norwalk
Preston N. Lurie, Greenwich
Jeanne M. Marconi, Ridgefield
Peter A. McCroskery, Stamford
Nicholas P. Mongillo, Stratford
Richard Morgulis, Stamford
Lawrence D. Muldoon, Bridgeport
Martin Perlin, Rowayton
George A. Petrossian, Bridgeport
Mitchell Prywes, Danbury
Lauren Pueraro, Stamford
Stephen M. Rabinowitz, Fairfield
Syed H. Reza, Fairfield
David M. Ross, Fairfield
Frank Sammarco, Norwalk
Suzy Schneider, Stamford
Elizabeth Siderides, Stamford
Miroslawa J. Skorupka, Stamford
Lenore M. Snowden, Stratford
Scott M. Spector, Norwalk
Celine M. Stahl-Bayliss, Southport
Susan A. Thomas, Newton
Joanne Thompson, Ridgefield
Richard H. Velaj, Stamford
Mark A. Venditti, Norwalk
Patricia E. Whitcombe, Danbury
Victor E. Ylagan, Danbury
Joanna Zolkowski-Wynne, Bridgeport

HARTFORD COUNTY

Robert Borkowski, New Britian
Terrence K. Donahue, New Britian
Thomas W. Dugdale, III, Hartford
Neal F. Epstein, Hartford
Kevin J. Flanagan, Windsor
Wayne J. Gilbertie, East Hartford
Karen P. Haverly, New Britian
James R. Hilton, Weatogue
Maxine J. Klein, Hartford
David M. Kruger, Hartford
Peter S. Kurtis, West Hartford
Jeffrey L. Lovallo, Farmington
Douglas C. MacGillivray, Farmington
Robert S. Napoletano, Kensington
Gilberto E. Ramirez, Enfield
Barbara Sabinsky-Kalman, Hartford
Robert D. Siegel, Hartford
Joel S. Silver, Enfield
Mark S. Sperber, Avon
Steven R. Urbanski, Hartford
Todd A. Zachs, Hartford

LITCHFIELD COUNTY

Joan F. Puglia, New Milford

MIDDLESEX COUNTY

Harriet A. Fellows, Middletown
Carol L. Howe, Rockfall
Larry B. Levine, Middletown
Anthony Mascia, Guilford
Bernard V. McNulty, Middlefield
Mary A. Nicholas, Old Saybrook
Gita Roy, Middletown
Mehdi M. Saeedi, Middletown
Arvind T. Shah, Middletown
Timothy Tobin, Essex
Steven Trott, Middletown
Edward I. Winokur, Madison
Barbara Wirth, Middletown

NEW HAVEN COUNTY

Michael C. Bennick, New Haven
Samuel L. Bridgers, II, New Haven
Edmund F. Caporaso, Waterbury
Karen S. Dufour, Orange
Salvatore J. Ferrante, New Haven
Stefano Fusi, Madison
Harry K. Hajedemos, Meriden
Wayne I. Larrison, New Haven
Keith Lipsitz, Milford
Michael A. Mankus, Milford
John G. McCarthy, New Haven
Suzanne E. Miller, Waterbury
Stuart A. Nerzig, Southbury
Wilfred Reguero, New Haven
Alan M. Reznik, New Haven
Douglas L. Roberts, Madison
O. Tina Rose, New Haven
Barbara A. Ross, West Haven
Mark W. Schiffmiller, Waterbury
Ita Segal, Naugatuck
Craig A. Sklar, Waterbury
Ted R. Strayer, New Haven
Ulder J. Tillman, Waterbury
Joseph T. Tomanelli, Meriden
Kevin J. Twohig, New Haven
Neil B. Vitale, Waterbury
Kalman L. Watsky, New Haven
Jeffrey S. Wexler, New Haven

NEW LONDON COUNTY

Albert D. Ardao, New London
Robert R. Cross, New London
Shrikant R. Deshpande, New London
Kandhasamy Jagathambal, Norwich
Erica E. Jost, Mystic
Richard M. Manjerovic, New London
Peter C. Russ, Norwich
Peter M. Small, Groton

TOLLAND COUNTY

Peter B. Brown, Ellington
Matthew E. Bushey, Wallingford
Patricia Cremona, Rockville
John R. Garbarino, East Windsor
Sultan A. Quraishi, East Hartford
C. Venugopal, East Hartford

WINDHAM COUNTY

Timothy E. Cooper, Putnam
Paul J. Matty, Dayville

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities* should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203)-865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities.

***Physicians wishing to locate* in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

Announcements on the Physician Placement Service page under Classified Advertising are charged at the regular Classified Advertising rate.

OPPORTUNITIES FOR PRACTICE

FAMILY PRACTICE

Four doctor family practice group seeks board certified/board eligible F.P. to join them in May 1991 (or soon after). Busy office and hospital practice including ICU, CCU, Pediatric, and Nursery privileges. (No O.B.) Shoreline community with excellent schools and quality of life. Favorable call schedule. Both full-time and part-time considered. Send CV to: Dr. Steven W. Luger, 8 Davis Rd., Old Lyme, CT 06371 or call (203) 434-8300.

FAMILY PRACTICE/INTERNAL MEDICINE

FP/INTERNIST—BE/BC sought for Southern Fairfield County Community. Opportunity to share established group practice. Salary/benefit package, including malpractice. Start 1991. Send letter of interest and CV to: CSMS, c/o FP/KO.

GENERAL SURGERY

Senior general surgeon is seeking young general surgeon BE/BC to replace young general surgeon partner who plans to relocate. Applicant should be qualified to perform laparoscopic surgery and endoscopic procedures. Position will be available on or about July 1, 1991. Send letter of interest and CV to CSMS, c/o GS/KW.

INTERNAL MEDICINE

BC/BE internist to assume large, solo practice along Branford shoreline established nine years ago. Fully-equipped, modern, computerized office minutes from New Haven. Large nursing home practice can be assumed if desired. Opportunity for academic appointment at Yale and patients admitted to Yale-New Haven Hospital. Physician activated for duty in Gulf wishes to turn practice over. Assume practice and rent office. Cross-coverage with another internist already established. Send CV and letter of interest as soon as possible to Dr. A.D. Weinberg, 144 North Main St., Branford, CT 06405.

Hartford—Available (due to retirement) large established private INTERNAL MEDICINE PRACTICE. Hartford hospital associated, all equipment, computer billing, favorable finances available presently. Write CSMS, c/o IM/QV.

Internist. BE/BC. Southeastern Connecticut. Excellent hospital, good schools, and supportive hospital administration. Excellent coverage. Busy office, hospital and nursing home. Write, Edward J. McDermott, M.D., 174 Bridge St., Groton, CT 06340.

Internal medicine physician to join busy solo practice in Central Connecticut. Reply to: 245 North Main St., Wallingford, CT 06492.

BC/BE internist to replace retired physician. Opportunity to build own practice; share office, expenses, and coverage. Please send CV to George Burton, M.D., 488 Montauk Ave., New London, CT 06320.

Internist, with or without subspecialty, to associate with internist/cardiologist. Open both to established practitioners and those fresh from residency or fellowship. Begin anytime up to July, 1991. Send CV to Jonathan Greenwald, M.D., FACP, FACC, 148 East Ave., Norwalk, CT 06851-5734; Tel: (203)866-7000.

Small private practice in Greater Hartford area looking for internist. BC/BE. Salary plus bonus and partnership potential. Affiliated with local hospital. Great growth potential. Available immediately. Call (203)676-0680 or send CV to: Devra Sisitsky, Suite 103, 302 West Main St., Avon, CT 06001.

NEUROLOGY

Connecticut BC/BE neurologist wanted to join established five person group in single hospital private practice setting. Competitive salary with benefits leading to partnership. For details fax CV to (203) 790-6375 or write Jan Mashman, M.D., Associated Neurologists, 69 Sand Pit Rd., Danbury, CT 06810-4088.

PART-TIME

Part-time physician needed. Position available immediately. Evenings (4:00-8:00) and some Saturdays (9:00-5:00). Please call (203)665-0305, any weekday between 9:00 and 4:00.

PEDIATRICS

Connecticut—BC/BE pediatrician needed to join two young pediatricians in rapidly growing central Connecticut practice. Send CV to: Mitchel Katz, M.D., 760 Saybrook Rd., Middletown, CT 06457.

Pediatrician full or part-time to replace physician in four doctor group. Affiliated with teaching hospital with residency program. Also associated with University Health Service. Please contact: Francis J. Scholan, M.D., 99 Harbor Rd., Southport, CT 06490.

Coastal Connecticut. BC/BE pediatrician to join busy two-person practice in beautiful shoreline community. University affiliated hospital nearby. Excellent salary, production bonus, early partnership. Available July 1991. Send CV to CSMS, c/o, PED/PY.

Pediatrics (Cont.)

Exceptional opportunity to join a pediatric group practice of four BC/BE pediatricians. Practice is located in shoreline community five miles from Yale-New Haven Medical Center, our chief hospital affiliation. Sole owner is original partner of practice established in 1955. Starting salary $80,000.00 per year with buy-in option after one year. Part-time position also available. Call (203) 248-4846 after any evening after 8:00 P.M.

Connecticut—The Stamford Hospital, staff pediatrician, PL-3 (equivalent or beyond). Busy nursery, active OPD, small inpatient (includes night call). CV and references to: The Stamford Hospital, Dept. of Pediatrics, P.O. Box 9317, Stamford, CT 06904-9317. (203) 325-7082.

RADIOLOGY

Radiologist to join three man practice covering two private offices and two hospitals in Eastern CT and RI. Competitive salary, excellent living conditions in shoreline community. Interested applicants may contact John W. Foster, Jr., M.D. at (401) 447-1766.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

FAMILY PRACTICE

July '91. No age given. FLEX. AB elig. MD, University Health Sciences, Kansas City Osteopathic School, Kansas City, MO; Int. and Res., University of Massachusetts Medical Center, Worcester, MA. Very interested in *Obstetrics*. Prefers solo, group or associate type practice in small-sized community in the southwestern part of Connecticut. Write Gwen Broz, D.O., 18 Harlow St., Worcester, MA 01605.

Oct. '90. Age 34. Presently in practice. Nat'l bds. AB cert. M.D., Medical College of VA; Int. and Res., Abington Hospital, Abinton, PA. Prefers group, associate or institutional type practice. Write, Jeffrey C. Ettinger, M.D., 501 Bryce Canyon Court, Petaluma, CA 94954.

FAMILY PRACTICE/GENERAL SURGERY

PART TIME. Immediately available. Age 76. Licensed in Connecticut. Nat'l bds. AB cert. MD, SUNY, Syracuse, NY. Int., Brooklyn Hospital, Brooklyn, NY; Res., Mount Sinai Hospital, New York, NY (formerly NY Post-Graduate Hospital). Prefers group, associate or institutional type practice (24-32 hrs/wk). Write, CSMS c/o MM/FP.

INTERNAL MEDICINE

Jan. '91. Age 37. Presently in practice. Nat'l bds. AB elig. MD, Columbia University College of Physicians and Surgeons, New York, NY; Int. and Res., North Shore University Hospital, New York, NY. Prefers group type practice in a medium-sized community. Write, CSMS c/o JJ/IM.

June '91. Age 28. Nat'l bds. AB elig. MD, Tufts University, Boston, MA; Int. and Res., Baystate Medical Center, Springfield, MA. Prefers group or associate type practice in Hartford or neighboring regions. Write, Katrina Turner, M.D., 515 Nassau Dr., Springfield, MA 01129.

'Jul. '91. *Pulmonary, Critical Care*. Age 35. FLEX. AB cert., AB elig. (Critical care). MD. University of Rome, Rome, Italy; Int., St. Michael's Medical Center, Newark, NJ; Res., New Rochelle Hospital Medical Center, New Rochelle, NY; Fellowship, UMDNJ Robert Wood Johnson Medical School, (formerly Rutgers Medical School), New Brunswick, NJ. Trained in all aspects of pulmonary and critical care medicine including sleep and exercise physiology. Prefers solo, group, associate, or institutional type practice in a medium-sized community. Write, CSMS c/o JEC/IM.

ORTHOPEDICS

Jul. '91. Age 32. MD, New York Medical College, Valhalla, NY; Int. and Res., St. Lukes/Roosevelt Hospital, New York, NY; Fellowship, Hospital for Joint Diseases, New York, NY. Prefers solo or associate type practice in a small to medium-sized community. Write, James T. Mazzara, M.D., 68-15 Selfridge St., #2C, Forest Hills, NY 11375.

UROLOGY

July '91. Age 32. Nat'l bds. AB elig. MD, University of Connecticut School of Medicine, Farmington, CT; Int., Michael Reese Hospital and Medical Center, Chicago, IL; Res., University of Medicine and Dentistry of New Jersey, Newark, NJ. Prefers solo, group or associate type practice. Write, Harvey R. Samowitz, M.D., 142 Washington St., Bloomfield, NJ 07003.

PAID CLASSIFIED ADVERTISING

All paid classified advertising orders, correspondence and payments should be directed to: CONNECTICUT MEDICINE, Classified Department, 160 St. Ronan St., New Haven, CT 06511, Tel. (203) 865-0587. The classified rates are as follows: $60.00 for 25 words or less; plus $1.00 for each additional word. For confidential answers, the cost is $3.00 per insertion, sent in care of CONNECTICUT MEDICINE. Ad copy, with payment, must be received no later than the first day of the month preceding month of issue.

OUR POOR planning is your gain! We leased too much office space. Share fully furnished 1200 ft. medical office for a fraction of your own set up costs. Bloomfield/Cottage Grove area. Call 242-3239.

BOARD-CERTIFIED OPHTHALMOLOGIST, 36, well-trained, seeks practice opportunity with partnership potential. Reply *Connecticut Medicine*, Box CM, 160 St. Ronan St., New Haven, CT 06511.

SPACE AVAILABLE: Medical Center of Bloomfield. New, one story, stone and glass free-standing building; full handicapped access, automatic doors, extensive grade-level parking, contiguous to the Cottage Grove bus line. Orthopedic practice occupies 2,800 sq. ft.; 1,500 sq. ft. physical therapy will open March 1991; 4,000 sq. ft. remains. For inquires (203) 242-0100.

Osteomyelitis of the Spine

H. ULRICH BÜFF, M.D. AND ULRICH H. WEIL, M.D.

Introduction

SPINAL osteomyelitis constitutes about 1% of all cases of skeletal infection due to pyogenic organisms. Even today osteomyelitis is a major problem for the treating physician. General questions arise: What tests need to be done? Should a biopsy of the involved area be taken? Does the patient require antibiotics and, if so, for how long? Is conservative or operative treatment indicated? How long should the patient stay in bed, if at all? Does the patient need a brace or fixation device?

Pathology

The vascularity of the spinal column contributes to the likelihood of bacteria lodging in the vertebral trabeculae. Batson performed injection experiments in monkeys in 1940 and concluded that the venous flow from the pelvic veins is into the vertebral venous system during abdominal straining, as in the Valsalva maneuver. According to his hypothesis microorganisms and tumor cells can spread from the pelvic system directly into the vertebral veins, bypassing the portacaval venous system.[1]

His conclusion was questioned by Wiley and Trueta in their work on the vascular anatomy of the spine and its relationship to pyogenic vertebral osteomyelitis. They demonstrated that the blood supply to the vertebral body is first of all through posterior arterioles which enter the vertebral body approximately in its center. Their conclusion was that, though a venous route does exist, they could not support the idea that infection is likely to spread by this route or that there is any definite clinical, pathologic, or anatomical evidence that such spread occurs.[2]

In general the mode of introduction of organisms into the spinal column can be hemotogenous or lymphatic (as in tuberculosis), by direct spread, postsurgical, and through diagnostic studies. Many organisms have been identified in the infected vertebrae. The most frequently found are *Staphylococcus aureus* and *Pseudomonas aeruginosa* (the latter occurs mostly in IV drug abusers). *M. tuberculosis* is found more often as an underlying organism in Third World countries, whereas salmonella infection of the spine is most common in patients with sickle-cell disease.

Schmorl stated that the organisms are localized in the center of the vertebral body and then either spread to the front, elevate the anterior-longitudinal ligament and continue to spread longitudinally, or extend posteriorly toward the epidural space with the possibility of abscess. The third possibility, which is actually fairly frequent, is the location of organisms close to the end plate, from where they spread to the disc and into the nucleus pulposus.[3] The pathologic changes are impressive. The vertebral bodies are collapsed, the disc spaces are gone, and, especially in tuberculosis, we find an increased gibbus formation. Patients who are more susceptible to spinal sepsis are adolescents, the elderly, patients with diabetes or renal dysfunction, IV drug abusers, and patients who have had discography or spine surgery. McHenry showed that osteoporosis is a factor that predisposes to osteomyelitis.[4] It is well known that osteoporosis leads to increased blood flow in the bone affected, facilitating the infectious process in the involved organ.

Symptoms

The first major study on osteomyelitis of the spine was reported in 1936 by Kulowski; he analyzed 102 cases of vertebral osteomyelitis. One percent of all cases hospitalized at the University of Iowa at that time were due to some form of pyogenic osteomyelitis. The most important initial diagnosis was tuberculosis, followed by appendicitis, perinephritic abscess, pneumonia, mediastinal malignancy, and meningitis. The mortality in the preantibiotic era was 25%. In case of spinal canal complications, mortality increased to 50%. Fifteen percent of his patients developed a gibbus.[5]

Ross and Fleming performed a retrospective analysis of 37 cases in 1975. The osteomyelitis was localized mainly in the dorsolumbar area, with a few cases in the cervical region. Eighty-five percent of the patients complained of spontaneous back pain, 80% of fever, and 75% of weight

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H. ULRICH BÜFF, M.D., Clinical Instructor, Orthopedics and Rehabilitation. ULRICH H. WEIL, M.D., Clinical Professor of Orthopedics and Rehabilitation; both of the Yale University School of Medicine, New Haven.

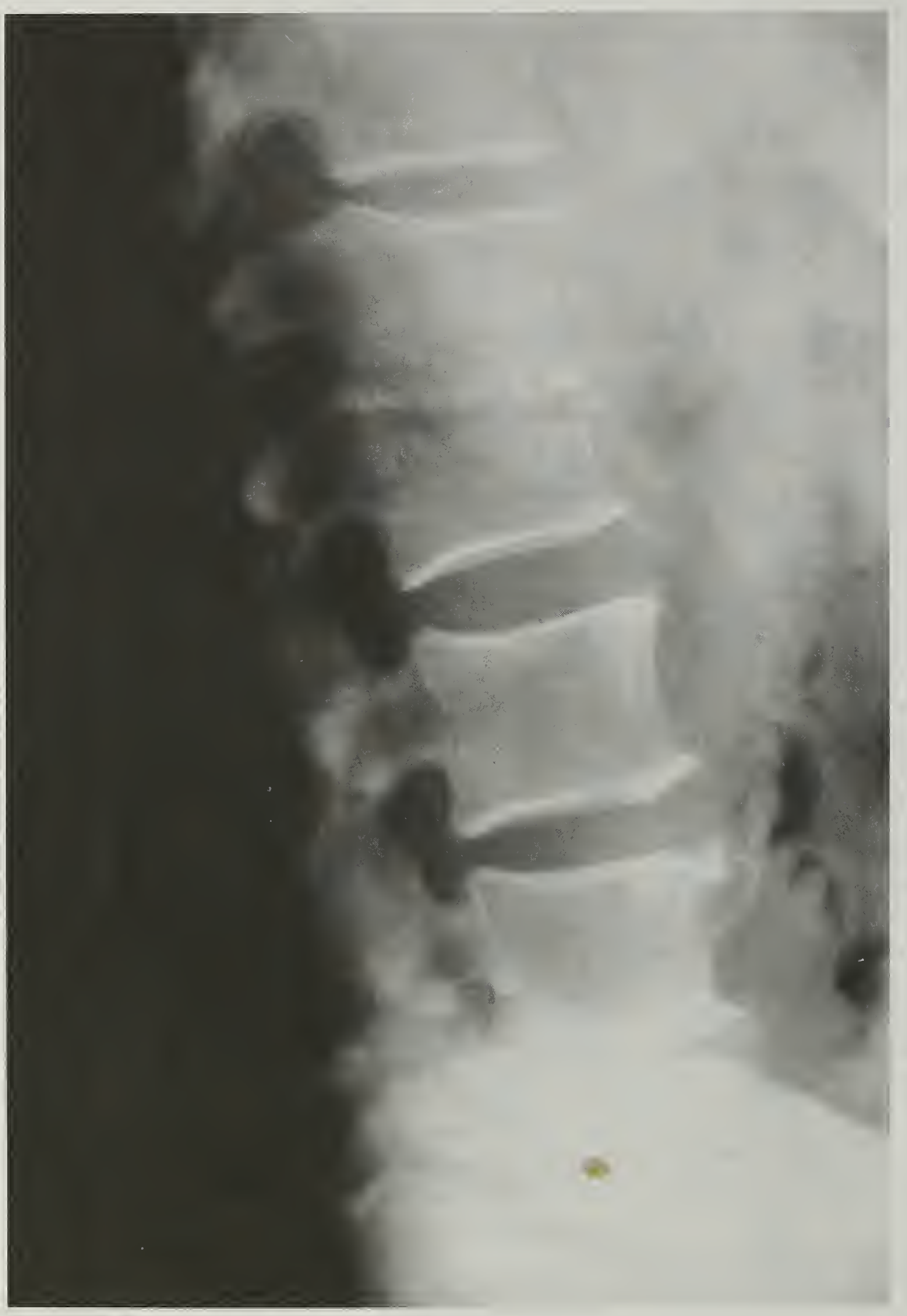


Figure 1A

62-year old male with a four week history of low back pain and fever without neurologic deficit. The disc space between L1 and L2 is decreased.

loss. Some patients had muscular spasm, one had a Horner's syndrome, and one dysphagia. The site of the preexisting infection was mainly the genitourinary tract or the skin. The sedimentation rate was elevated in nearly all patients; 30% of the patients had a positive tuberculin test. Seven patients presented with positive blood and spinal fluid cultures. They concluded that any patient with a urinary tract infection who developed neck or radiating pain should be suspected of having vertebral osteomyelitis.[6]

Digby reported that there is frequently a delay in diagnosing patients with pyogenic vertebral osteomyelitis. It took approximately 13 weeks to arrive at the correct diagnosis when the chief presenting symptom was back pain, which was not always severe and sometimes was unrelated to posture or movement. The erythrocyte sedimentation rate was elevated up to 150 mm per hour in several of his patients.[7]

Diagnosis

The first diagnostic test performed on patients suspected of having vertebral osteomyelitis is usually a plain roentgenogram, which may be followed by a tomogram. Further recommended tests are a technetium bone scan and a gallium scan. The computerized tomogram (CT) will show the extent of the abscess and any additional destruction. Magnetic resonance imaging (MRI) has become a frequent tool used to identify the extent of an abscess in a patient with vertebral osteomyelitis. The MRI and technetium bone scan are equally sensitive in showing changes consistent with osteomyelitis.[8]

The radiologic changes consist in an erosion of the end-plates, which occurs early. After approximately six to eight weeks the erosion is followed by narrowing of the disc height. According to Fredericson, lysis of the vertebral body follows, and finally spontaneous fusion can occur.[9] Authors differ regarding the sequence of radiologic changes in nontubercular spinal infections. Ross pointed out that vertebral bony fusion occurred at six months in his patient group.[6]

Pyogenic osteomyelitis is fundamentally different from tuberculosis. A patient with pyogenic osteomyelitis has an acute onset of pain. X-ray films obtained early are very often normal. In contrast, patients with tuberculosis usually complain of long-standing back pain. By the time they are seen by a physician, x-ray films show major calcification and destruction of the spinal column. The patient with pyogenic osteomyelitis has early disc involvement, whereas in tuberculosis the disc space is often spared. In pyogenic osteomyelitis reactive sclerosis occurs after three or four months as opposed to osteoporosis in tuberculosis. Intervertebral body fusion follows after six to 24 months; these phenomena are seen also in tuberculosis, although they appear later. Figure 1 shows the typical picture of a pyogenic vertebral osteomyelitis with decreased disc space between the two involved vertebrae. The vertebral bodies are partially collapsed. The corresponding MRI shows major involvement of the disc space and the extension of the infection into both vertebral bodies. The posterior longitudinal ligament is slightly elevated without major compression of the dural sac.

Do we need a closed or open biopsy? If blood cultures are negative then a specimen of the involved area must be obtained. A Craig needle aspiration biopsy or a CT-guided biopsy might be sufficient. In those cases in which the biopsy results are inconclusive, however, an open biopsy must be performed. This can be done from an anterior or posterior surgical approach depending on the localization of the pathologic lesion and on the age of the patient.

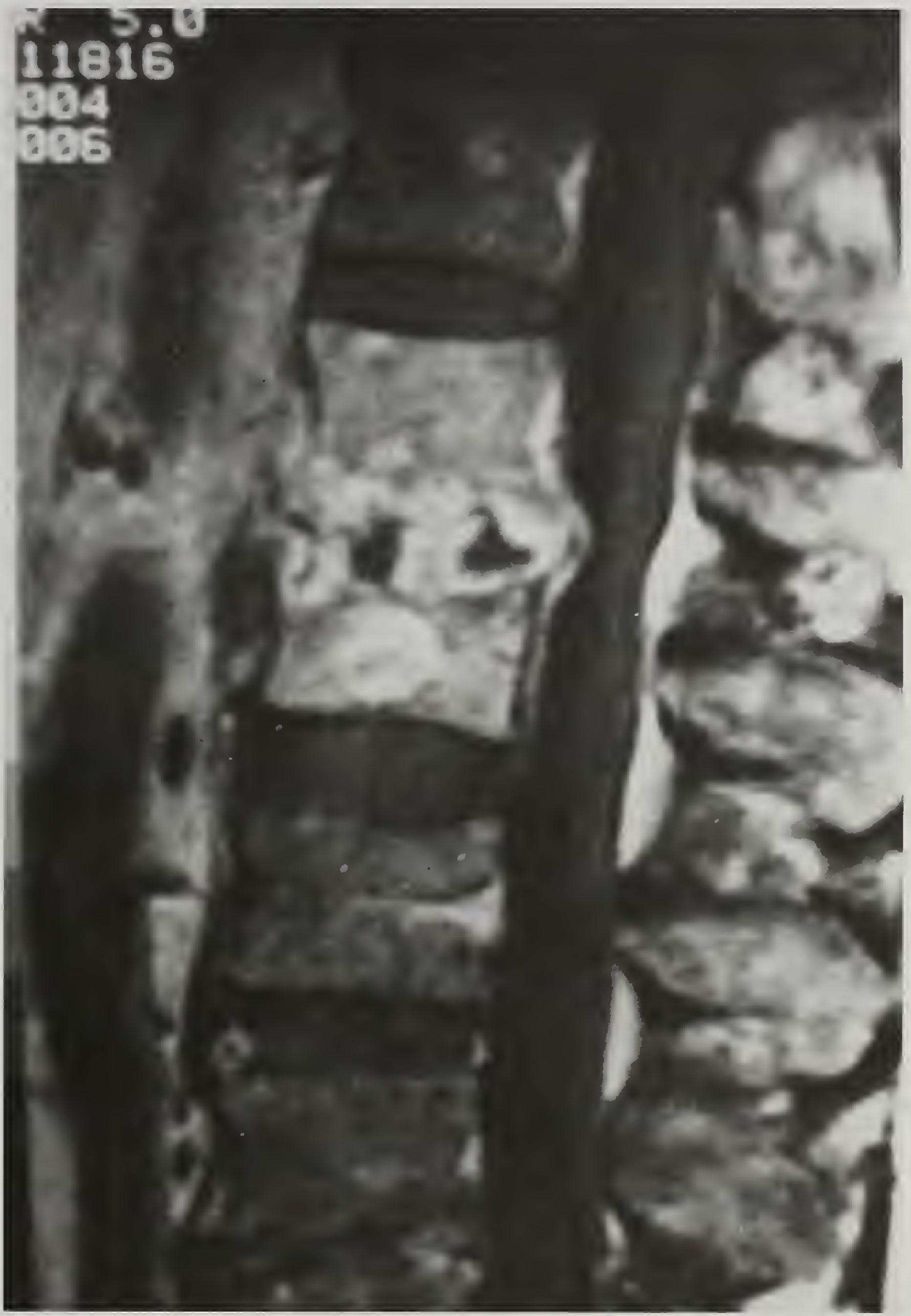


Figure 1B

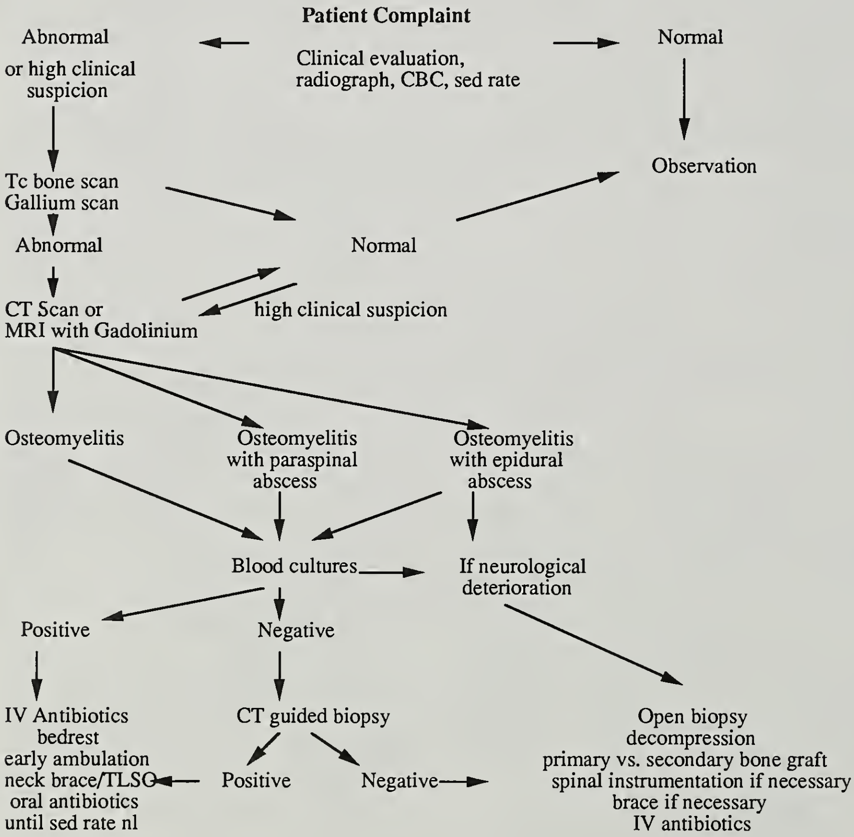
The MRI taken at the same time as the roentgenogram shows the destruction of the disc space with involvement of the adjacent end plates. The posterior longitudinal ligament bulges against the spinal cord. The increased round signal in the vertebral body of L2 represents a hemangioma.

Management

Fredericson et al designed the optimal management plan. Early suspicion is important. A biopsy and blood cultures must be obtained. The patient is then treated by antibiotics and by aggressive drainage of the abscesses if necessary. Blood cultures are valuable if positive, though organisms isolated from concurrent urinary tract infections may only suggest the etiology. Fredericson presented several cases in which the urinary cultures were positive but the organism was not the same as the organisms found in the vertebral culture. Therefore, a biopsy is required for a definitive diagnosis if the blood cultures are negative. An operation is not indicated if the response to the appropriate antibiotic is favorable. This is important to all physicians because orthopedic surgeons are often encouraged to obtain a tissue diagnosis and to operate on patients with possible vertebral osteomyelitis in spite of favorable response to antibiotic treatment.[9]

Forsythe and Rothman see as absolute indications for surgery: tissue and bacterial diagnosis, moderate to advanced destruction, neurologic deficit, instability, abscess or sequester formation, and lack of response to medical therapy. Relative indications for surgery are the prevention of progressive deformity, dramatic relief of symptoms, and shortening of the course of the disease.[10] Emery was successful in aggressively treating hemotogenous pyogenic vertebral osteomyelitis with anterior debridement and primary bone grafting. There was no recurrence of vertebral osteomyelitis among his 21 patients. All patients with neurologic deficits recovered; most patients, however, needed to stay on a Striker frame for four to six weeks postoperatively.[11]

Diagnostic and Therapeutic Strategy in Vertebral Osteomyelitis



Vertebral Osteomyelitis with Epidural Abscess

Eismont studied patients with pyogenic and fungal vertebral osteomyelitis with paralysis. Predispositions to paralysis were diabetes mellitus, rheumatoid arthritis, increased age, and more cephalad level of infection. In his 31 patients with neurologic deficits, several had root lesions. His recommendation was that patients with an anterior compression of the spinal cord due to osteomyelitis should undergo anterior decompression as soon as possible, that is, as an emergency procedure before intrinsic damage to the cord occurred. In a doubtful case anterior decompression should be done even prophylactically because, according to Eismont, it can do little harm. He also stated that patients with root lesions do well with or without surgery. Patients with cord lesions showed improvement of the neurologic status after anterior decompression, but rarely after laminectomy. Actually, in several cases laminectomy led to a deterioration of the patient's condition.[12]

Danner and Hartman in their very thorough review of the literature noted that typical clinical signs in patients with spinal abscess are spinal ache, root pain, weakness, and paralysis. Successful treatment should begin early when spinal ache starts; often, however, the patient is seen by a physician only after the onset of radicular pain.[13] According to Russell the pathophysiology of paralysis in cases with an epidural abscess is secondary to direct pressure of the abscess, as well as secondary to vascular events within the spinal cord where small vessels may be occluded by thrombosis.[14] It is well known through Hodgson's studies that in tuberculosis permeation of the motor horn cells with tubercle bacilli may occur.[15] Danner showed that the cause of an epidural abscess was skin and soft tissue infection in 21%, and vertebral osteomyelitis in nearly 40% of the cases. *Staphylococcus aureus* was involved 62% of the time and aerobic gram-negative organisms in 18%. Myelograms showed an almost even distribution of the abscess, with anterior location in 49% and posterior location in 51%. Nearly all patients with an epidural abscess underwent surgery. Thirty-nine percent recovered completely, 26% continued to have weakness, 22% paralysis, and 13% of the patients succumbed to the disease.[12] This definitely represents a major improvement when compared to Kulowski's 1936 studies, in which 50% of patients with epidural-space involvement died.

New studies (Leys et al) show decreased morbidity from acute bacterial spinal epidural abscess diagnosed by CT and treated nonsurgically in selected patients. They had an incidence of 2.8 spinal abscesses in 10,000 cases. Leys performed a CT scan with IV contrast to establish the diagnosis. He then injected antibiotics subdurally and followed this treatment with intravenous antibiotics, using cefotaxime, fosfomycin, and tobramycin for approximately eight weeks. Leys presented 30 patients who had spinal cord lesions as well as root lesions, and nearly all of these patients improved under conservative treatment. Nonoperative treatment is indicated for poor surgical candidates as well as for patients with involvement of the abscess over many vertebral levels within the spinal canal, for those who are not suffering severe loss of spinal cord function, or those with complete paralysis lasting more than three days. An absolute operative indication, however, is a rapid neurologic deterioration. Leys regards the epidural abscess as a surgical emergency that requires treatment before the onset of paraesthesias.[16]

In recent years we have seen a marked increase in vertebral osteomyelitis in intravenous drug abusers. Sapico found vertebral osteomyelitis in intravenous drug abusers in the age group 20-49; this is in contrast to previous reports in which vertebral osteomyelitis was found mainly in adolescents and the elderly. The most important organism found was *Pseudomonas aeruginosa*, present in 65% of the cases. The prognosis for the patient is excellent, and there are rarely neurologic sequellae. The patients responded well to IV antibiotics, and only 27% needed a surgical procedure.[17]

Mampalam et al reported on the nonoperative treatment of epidural abscesses. In his experience, based on five patients, most of whom were IV drug abusers, a myelographic block in the lumbar region is not an absolute indication for surgical drainage. None of these patients presented with a neurologic deficit; all recovered after long-term antibiotic treatment.[18]

Conclusion

Vertebral osteomyelitis remains a challenge for the treating physician. Unrecognized, it can lead to severe neurologic sequellae with paraplegia and death. Early suspicion is necessary for a quick diagnosis. If blood cultures are negative, a needle biopsy is required. Intravenous antibiotic treatment should last approximately six weeks; patients should then receive oral antibiotics until the sedimentation rate reaches normal values. Bed rest in the early painful phase is recommended, followed by mobilization in a halobody jacket for cervical osteomyelitis or in a Jewett brace or thoraco-lumbar-sacral orthosis for involvement of the thoraco-lumbar region. An orthosis is not necessary in cases with destruction of less than 50% of the vertebral body.

Patients with a neurologic deficit usually require surgery. Primary or secondary stabilization with a strut graft is mandatory in spines rendered unstable through the infection. While additional posterior instrumentation with rods or plates and pedicle screws may enhance the overall stability of the spine the use of polymethylmethacrylate is obsolete in an infected field.

Patients who are intravenous drug abusers have an excellent prognosis and might do well without surgery, even in the presence of epidural abscess formation.

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Suicidal Behaviors Among Connecticut Youth

KATE S. AHMADI, PH.D., JOHN W. GOETHE, M.D., AND MARY L. ADAMS, M.S.

ABSTRACT—In the United States, youth (15-24 years) suicide rates increased 191% between 1950 and 1986. This paper presents data regarding suicidal ideation and attempts, suicide-related hospitalizations, and completed suicides among Connecticut youth, comparing them with data from other states and the United States.

Girls have higher rates of attempts and hospitalization, boys of completed suicide. Firearms are the suicidal method of choice for both sexes. Nonmetropolitan areas had higher rates than metropolitan.

Reported suicidal ideation among students ranges from 10% to as high as 66%, while attempts range from 3% to 15%. The authors stress that caution is necessary when comparing rates, pointing to the need for standardized data collection and analysis.

Reported rates of suicidal behavior are lower among Connecticut youth compared to their counterparts in other states, but suicide is increasing among young males in Connecticut and remains a major issue for health care providers.

Introduction

IN a recent review article, Blum pointed out that adolescents have not shared in the health improvements enjoyed by Americans during the past 30 years. More than three fourths of adolescent deaths are caused by trauma: unintentional injuries, suicide, and homicide.[1] Youth suicide has become a national concern, but few data are available at the local and state levels to guide the health care personnel who most frequently work with troubled adolescents.

Table 1
Survey of Literature:
High School & College Students' Lifetime Suicidal Behaviors

	Percentage Reporting	
Students	**Suicidal Ideation**	**Suicidal Attempt**
High School Students		
Connecticut		
Connecticut Health Check, 1990[4]	26.4%**	2.6%**
Goethe, Ahmadi, & Mirabile[3]	13.0%	4.8%
Other States		
Friedman, 87[5]	52.9%	8.7%
Smith & Crawford, 86[6]	62.6%***	10.5%
Rubenstein, et al, 89[7]	—	20.0%****
College Students		
Connecticut		
Connecticut Health Check, 89[8]	15.9%**	0.9%**
Other States		
Goldberg, 81[9]	10.4%*	—
Craig & Senter, 72[10]	29.5%**	—
Rudd, 89[11]	43.7%**	5.5%**
Mishara, 82[12]	38.6%	15.8%
	48.2%	12.0%
Mishara, Baker & Mishara, 76[13]	64.8%	15.0%
Bonner & Rich, 87[14]	66%	3%

* previous month only.
** previous year only.
*** ideation or action.
**** includes other self-harm also.

The authors review the nature and extent of suicidal behavior among "normal" community youth (ages 15-24) in Connecticut and compare these data with those from other states. Suicidal behavior includes suicidal ideation and attempts, suicide-related hospitalizations, and completed suicides.

Suicidal Ideation and Attempts

In an event history analysis, 364 undergraduates were asked about their previous suicidal ideation. About 50%

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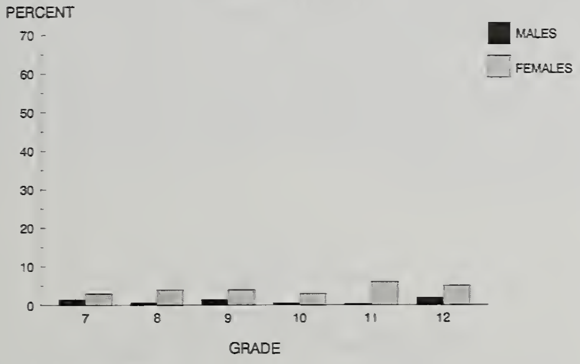
reported that they had thought about suicide by age 15, while the percentage had increased to about 65% by age 20, and 75% by age 24.[2]

A survey of the literature on high school and college students' lifetime suicidal ideation and attempts reveals large disparities among study results (Table 1). Some of these differences may be attributable to the type of student: for example, one study deals with college preparatory students only.[3] Some of the differences may be accounted for by seriousness of intent, some by different intervals of time, and some by the inclusion of additional suicidal behaviors. The most representative studies indicate that about half of high school and college students report having experienced suicidal ideation during their lives, while about 10% of high school students and 15% of college students report having attempted suicide during their lives.

FIGURE 1
CT HEALTH CHECK - 1987 - 1988
ATTEMPTED SUICIDE



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The Connecticut studies indicate that youths in this state have lower reported rates of suicidal ideation and attempts than youths in the other states studied. Students (n=296) at a private high school in Connecticut were surveyed in 1985. The preliminary results indicate that 13% had seriously contemplated suicide during their lives. When asked whether they had ever attempted suicide, almost 5% reported having done so.[3]

During the academic year 1989-90, the Center for Chronic Disease & Urban/Rural Health of the Connecticut Department of Health Services conducted Health Risk Appraisals as part of "Connecticut Health Check" on 5,080 students in 25 selected public and private Connecticut high schools. Suicide was reported as having been thought about during the previous year by over 26% of the students: suicidal attempts during the previous year were reported by almost 3% of the students. Thirteen percent of the students reported that a friend or classmate had committed suicide.[4]

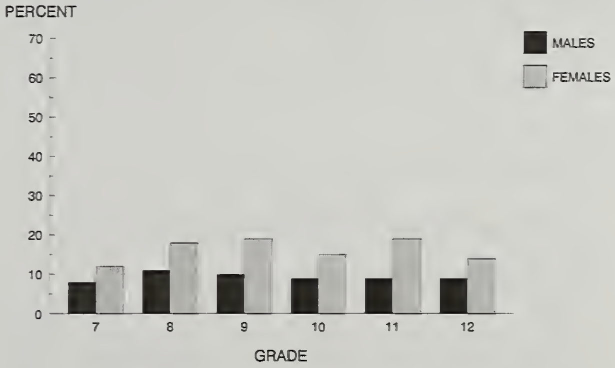
In the 1987 sample, higher percentages of suicidal attempts among girls and among students in the upper grades are noticeable in Figure 1.[15] Nine percent of the males and 17% of the females were considered to be at risk of suicide (Figure 2), based on their responses to questions on coping with depression, feelings about whether life is worth living, considering suicide, and attempting suicide during the previous year.[15]

The Center for Chronic Disease & Urban/Rural Health of the Connecticut Department of Health Services has also looked at the suicidal ideation and attempts of 465 students at four selected colleges in Connecticut. During the previous year suicidal ideation was reported by almost 16% of the students. An additional 0.9% of the students reported having attempted suicide during the past year. Having had someone in their families commit suicide was reported by 6% of the students.[8]

Suicide-Related Hospitalizations

The Connecticut Coalition to Prevent Childhood Injuries collected data from 36 Connecticut acute care hospitals through the Uniform Hospital Discharge Data Set.[16] The Coalition estimated that there were 428 acute care injury-related hospital discharges of persons aged 0-19 years for suicide-related causes from Connecticut hospitals in 1986; 2,247 hospital days were involved, and the cost of these services was $1,251,579. That suicide-related hospitalization rates were higher for female than male adolescents (aged 15-19) is illustrated in Figure 3.[17]

FIGURE 2
CT HEALTH CHECK - 1987 - 1988
"AT RISK"



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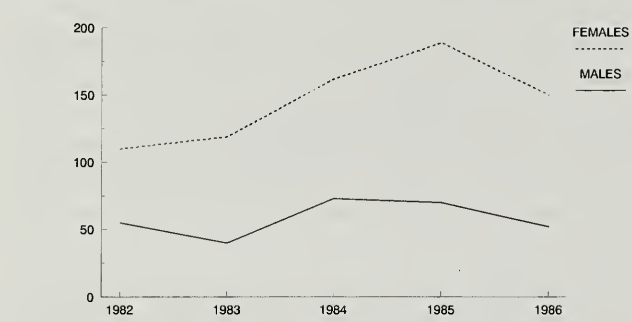
Suicide

Numbers of Connecticut youth suicides in 1987 are displayed in Figure 4.[18] A similar predominance of older youths and of male youths is found in U.S. statistics.[19]

FIGURE 3
SUICIDE HOSPITALIZATION RATES
AGES 15 - 19, CONNECTICUT, 1982 - 1986



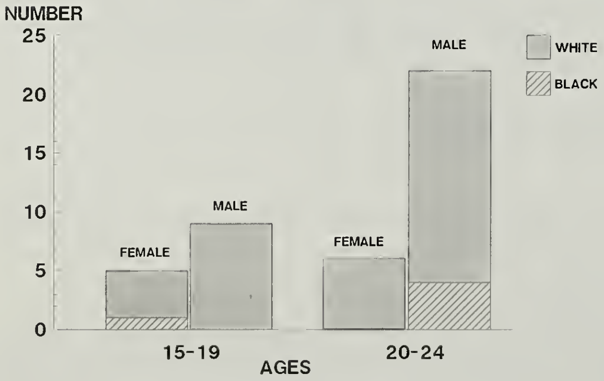
CT. COALITION TO PREVENT CHILDHOOD INJURIES

Males, who constitute approximately half the population, accounted for about 82% of years of potential life lost due to suicide in 1983.[20]

The patterns of age-specific Connecticut and U.S. youth suicide rates between 1970 and 1986 are shown in Figure 5.[20-23] For both males and females, the Connecticut youth suicide rate between 1970 and 1986 remained lower, although more variable, than the national rate. The Connecticut Department of Health Services examined the rate of change for male and female youths between 1970 and 1986; they found a significant average yearly rate of increase (0.3/100,000 population) for males, but for females no significant change.[24] The U.S. age-specific youth suicide rate, on the other hand, increased 191% between 1950 and 1986; the youth suicide rate was less than half the total population age-adjusted rate for all ages in 1950, but has risen to be higher than the overall rate since 1980.[22]

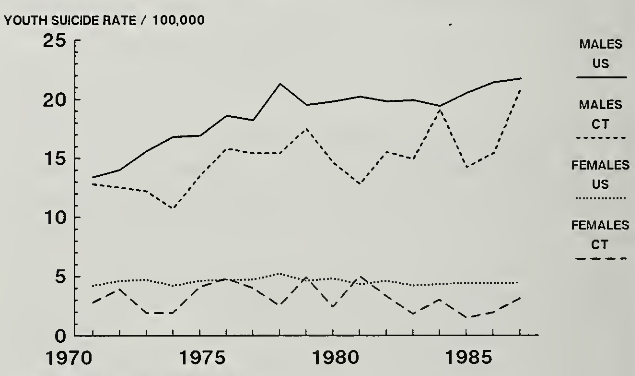
In 1978 Connecticut youth suicide rates were lower for residents of Standard Metropolitan Statistical Area (SMSA) counties than for residents of nonmetropolitan counties. A similar pattern existed in 1970 for 20-24-year-old youths only, but not for 15-19-year-olds. In the U.S., youth suicide rates were the same as or higher for SMSA than for nonmetropolitan county residents in both 1978 and 1970.[19]

FIGURE 4
REPORTED SUICIDES: CONNECTICUT YOUTHS, 1987



The preferred methods of suicide for Connecticut youths in 1987 were firearms/explosives and hanging/strangulation/suffocation (Table 2).[25] Only one of the guns, used by a male 20-24-year-old, was classified as a shot gun; none were hand guns. The others were unspecified or were categorized as "other."[26] In the U.S., firearms accounted for more than half the suicides—even, for the first time, among females—in the youthful group in 1984.[20] The firearm suicide rate for youths has climbed more rapidly than the nonfirearm rate, particularly for 20-24-year-old males.[27]

FIGURE 5
CT & US AGE SPECIFIC YOUTH SUICIDE RATES



CT DEPT. OF HEALTH SERVICES & US DATA

Discussion

In Connecticut, youth suicidal behavior seems to be a somewhat smaller problem quantitatively than in some other states. Published studies suggest that a smaller proportion of high school and college students in Connecticut than among their counterparts in other states admit to suicidal ideation. The Goethe and associates' study refers to *serious* suicidal ideation only.[4] The Adams and Dewey[15] and Connecticut Health Check[4,8] studies refer to both serious and nonserious ideation, yet even so the numbers are smaller than in all but one of the studies cited above,[9] a study referring to ideation during the previous month only. In addition, the Connecticut youth suicide rates for both males and females have remained lower than those for the U.S. as a whole between 1970 and 1986.

One must of course be cautious in comparing these rates. There is no standard format for the studies, and there is considerable variability in the types of data collected and in the methods of assessing suicidal behavior. It may be that responders to surveys differ from nonresponders, leading to unsuspected sampling biases. Many suicides may be subsumed within the category of unintentional injuries (accidents); it has been estimated in a survey of coroners' attitudes that reported suicide rates are less than half actual rates.[20,28]

Bolger and associates have suggested yet another explanation for the variability in reported rates.[2] Studies in which suicidal ideation has been clearly focused upon and in which anonymity has been guaranteed have found higher rates of suicidal ideation. They also note that society has been dealing more openly with suicide since the late 1970s, perhaps leading to greater willingness to respond truthfully to surveys.

Table 2
Reported Suicide Method
Connecticut Youths, 1987

	Sex	
Method	**Female**	**Male**
Firearms	5	15
Hanging	3	12
Poison	2	3
Cutting	0	1
Drowning	0	1
Other	2	0
TOTAL	**12**	**32**

Conn. Dept. of Health Services Data.

The problem of suicidal behavior among Connecticut youth is large—and at least among males—growing, despite an apparently lower rate than reported for other states. In 1987-88, almost three in 10 surveyed youngsters in selected public and private schools said they had considered suicide during the previous year; more than one in 10 of all these youths are considered to be at risk of suicide, and almost three in 100 said that they had attempted suicide during the previous year. Almost one in 20 preparatory school students acknowledged a suicide attempt during their lifetimes. More than one in 10 surveyed high school students reported having had a friend who had committed suicide, while more than one in 20 surveyed college students said that someone in their families had committed suicide. The estimated cost for acute care suicide-related hospitalization of Connecticut youths was well over a million dollars in 1986, a year during which at least 63 of our young people killed themselves.[29]

Youth suicide is a major issue for Connecticut which affects all segments of the population. While this conclusion may be generally accepted, commitment to and support for studies are needed. Educators, health care personnel, and community agencies must be better prepared to identify and respond to youth at risk for suicide. Additional research can lead to improved methods of data collection and greater understanding of the factors involved for Connecticut youth.

This paper is an expanded version of a paper presented at the "Data on Suicide and Connecticut Youth" Workshop of the Connecticut Legislative Task Force on Suicide Prevention Conference, "Connecticut Responds to Youth Suicide," on 28 April 1989.

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Mortality Attributable to HIV Infection/AIDS - United States, 1981-90

From 1981 through 1990, 100,777 deaths among persons with acquired immunodeficiency syndrome (AIDS) were reported to CDC by local, state, and territorial health departments; almost one third (31,196) of these deaths were reported during 1990.[*] During the 1980s, AIDS emerged as a leading cause of death among young adults in the United States. By 1988,[+] human immunodeficiency virus (HIV) infection/AIDS had become the third leading cause of death among men 25-44 years of age and, by 1989, was estimated to be second, surpassing heart disease, cancer, suicide, and homicide. In 1988, HIV infection/AIDS ranked eighth among causes of death among women 25-44 years of age; in 1991, based on current trends, HIV infection/AIDS is likely to rank among the five leading causes of death in this population.[1]

Most deaths from AIDS have occurred among homosexual/bisexual men (men who have had sex with other men) (59%) and among women and heterosexual men who are intravenous-drug users (21%). Nearly three fourths of deaths occurred among persons 25-44 years of age. Although most deaths occurred among whites, death rates have been highest for blacks and Hispanics. During 1990, the number of reported deaths (national AIDS surveillance) per 100,000 population was 29.3 for blacks (non-Hispanic), 22.2 for Hispanics, 8.7 for whites (non-Hispanic), 2.8 for Asian/Pacific Islanders, and 2.8 for American Indians/Alaskan Natives.

As a percentage of all deaths, HIV infection/AIDS mortality has been greatest among persons 25-44 years of age. In 1989, among persons in this age group, HIV infection/AIDS accounted for 14% and 4% of all deaths among men and women, respectively; these proportions were more similar for white men and black men (14% and 16%, respectively) than for white women and black women (2% and 9%, respectively).[2]

The impact of AIDS on mortality patterns has been greater in certain areas of the United States than in others. For example, in San Francisco, Los Angeles, and New York City, HIV infection/AIDS is the leading cause of death among young adult men. In both New York State and New Jersey, HIV infection/AIDS is the leading cause of death among black women 15-44 years of age; in New Jersey, the number of deaths among this population from HIV infection/AIDS in 1988 was nearly equal to the number of deaths from the second and third leading causes combined (cancer and unintentional injuries.[1, CDC, unpublished data] In some locations, HIV infection/AIDS has become a major cause of death among young children; in New York State in 1988, HIV infection/AIDS was the leading cause of death among

Continued on page 92

Important Advances in Clinical Medicine

Physical Medicine and Rehabilitation

The Scientific Board of the California Medical Association presents the following inventory of items of progress in physical medicine and rehabilitation. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in physical medicine and rehabilitation that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Physical Medicine and Rehabilitation of the California Medical Association, and the summaries were prepared under its direction.

Lumbar Stabilizing Exercises for the Nonoperative Treatment of Disc Lesions

ALTHOUGH only a small percentage of patients with low-back pain have clear evidence of a herniated disc as the cause of their pain, these patients account for a majority of the lumbar spine operations performed in the United States, and the number of such operations in this country has increased substantially over the past ten years. The herniated lumber disc has been known for 50 years to be a cause of sciatica and back pain, yet, until recently, little has changed in the clinical approach and perspectives on treatment and pain mechanisms in this disorder. In patients with a primary complaint of leg pain and neurologic signs in a single-level distribution, a "success" rate of 72% to 90% could be achieved with a single-level discectomy. Thus, in the past, most of the patients with a lumbar herniated disc and radiculopathy were treated with varying amounts of bed rest and analgesic medication for two to six weeks, at the end of which they were considered to be surgical candidates if their symptoms had not reached a tolerable level. Moreover, those patients with a disc extrusion were referred to surgical therapy more quickly as this lesion was considered by itself to be an indication for such. Recent advances in our understanding of the biochemistry of the lumbar disc herniations, the natural history of lumbar disc extrusions treated nonoperatively, and the successful role of a specific exercise training program have expanded and improved the nonoperative treatment available for these patients.

Herniated disc material in the past was thought to generate symptoms solely by virtue of pressure on spinal nerves. Recent biochemical studies of herniated disc material from patients undergoing discectomy for rediculopathy disclosed high levels of an inflammatory enzyme, phospholipase A_2 has been shown to play a role in numerous pathologic states of inflammation. Its activity is considered to be the rate-limiting step in the production of prostaglandins and leukotrienes. As a source for the local production of prostaglandins and other inflammatory intermediates, it is therefore likely that herniated discs exert a chemical as well as mechanical influence on spinal nerve roots.

The use of stabilizing exercises for the nonoperative treatment of herniated lumbar discs has recently been shown to be as effective as surgical treatment, based on previously published results from surgical studies using the same type of patients. Consecutive patients with a primary complaint of leg pain and a disc herniation documented by magnetic resonance imaging (MRI) or computed tomography whose condition failed to improve with six weeks of passive measures were treated with an aggressive specific exercise program. Most of these patients had neurologic weakness equal to grade 1 on the manual muscle testing scale of the Medical Research Council. The program centered around the use of stabilizing exercises to train patients to limit rotational and flexion forces across the lumbar spine in all activities. The epidural administration of corticosteriods was used to control the inflammatory component in those patients whose pain prevented them from advancing in the exercise program.

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The program included the functional training of stabilizing techniques for all recreational and occupational activities. Most of the patients (93%) returned to work and to most preinjury recreational activities.

Included among the nonoperatively treated patients were patients with extruded lumbar discs and those who sought a second opinion regarding surgical treatment recommended as the only answer to their pain and disability. Among these groups, a success rate of 90% and 87%, respectively, was achieved. The patients with extruded disc herniations were then observed for as long as three years. Follow-up MRI studies were done to evaluate the presence of perineural fibrosis and the size of the disc herniation. Almost all of the disc fragments were smaller, and the majority had completely resolved. In no instance was there any sign of perineural fibrosis or fragment migration. An adequate control of inflammation coupled with a specific lumbar stabilization training program aimed at functional activity replaces the need for an operation in most patients with a herniated lumbar disc.

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Falls in the Elderly

FALLING represents a major health and socioeconomic problem with an estimated cost of $6 billion per year in the United States. It is the leading cause of death due to accidents among those 75 years of age or older. For every fall leading to death there are about 20 that result in hip fractures, accounting for at least 185,000 fall-related hip fractures per year. These fractures result in 40% of admissions to nursing homes. In the community among independently functioning older adults, one of three persons aged 65 years or older falls at least once a year.

Most falls do not result in serious injuries, but such episodes often lead to an increased fear of falling among the elderly, with a loss of self-confidence and less active life-style.

Factors that contribute to falling include impairments of the vestibular, visual, musculoskeletal, or proprioceptive systems that may be the result of intrinsic physiologic aging phenomena or deconditioning, cardiovascular or neurologic disorders, and impaired balance iatrogenically induced by medication. In a one-year prospective study of the relative risk of these potential hazards among 336 community-residing elderly aged 75 or older, the most important risk factors distinguishing the 32% who fell at least once were the use of sedatives (relative risk [RR] 3.1), previous falls (RR 2.5), lower extremity disabilities (RR 2.4), and a near vision loss of 20% or more (RR 1.7). The risk of falling increased linearly with the number of disabilities.

The result of efforts directed toward reducing the incidence of falls is thus far inconclusive. It has been shown, however, that the severity of injuries resulting from falls can be reduced by educating community-residing older adults on how to recognize and exercise caution in hazardous situations such as sudden glare, dark halls, and carpeted stairs with worn tread.

Additional strategies for preventing falls may include exercise to improve strength and mobility, health education with nutrition guidelines to retard bone loss, and medication counseling.

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Spinal Stenosis—What's New?

EXPERIMENTAL evidence regarding the pathophysiology of lumbar spinal stenosis has further defined the process in the central canal. The primary problem is venous stasis and spinal nerve root and dorsal root ganglia engorgement and edema. A low pressure is responsible for this and is rapidly reversible with the restoration of venous circulation, correlating well with neurogenic claudication. The spinal nerve root also is susceptible to entrapment in the lateral lumbar spinal canal, but no research has been done yet on the critical dimensions of this canal.

Central canal diameters considered to be critical are less than 130 mm^2, with a normal range of 200 to 340 mm^2. The cauda equina is protected by the dura until the central canal is narrowed to 75 mm^2. Venous stasis in the root occurs at a 25% constriction with no structural histopathologic damage and no clinical neurologic deficit. A 50% narrowing produces weakness and demyelination. With 75% constriction, severe root injury and cauda equina damage occur.

Structural changes do not determine the source of pain, and advances in electrophysiologic diagnosis have been made with dermatomal somatosensory evoked potential (SEP) testing. This allows a precise localization of the root level of intermittent neurologic dysfunction with only conduction block present. Root dysfunction due to venous stasis and transient conduction block is accurately detected by stress-SEP testing. Testing is done after a patient has walked until symptoms are produced. The sensitivity of this test is greater than twice that of electromyography. Somatosensory evoked potential testing allows a rapid noninvasive test to differentiate neurogenic from vascular intermittent claudication.

Precise neurodiagnostic testing serves as a guide to accurate surgical decompression. Intraoperative SEP testing can assure adequate root decompression. Neurophysiologic testing provides a measure of root function that cannot be intimated from radiologic structural assessments.

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Somatosensory Evoked Potentials in Cord and Root Diseases

SOMATOSENSORY Evoked Potentials (SEPs) for the stimulation of selected nerve trunks or areas of skin contained within dermatomes may be used for segmental localization of spinal cord impairment or for nerve root assessment. Segmental SEPs are scalp recordings taken over the appropriate topographic areas of the postcentral gyrus. An impairment is localized by selecting for stimulation those nerve trunks or areas of skin within dermatomes that are associated with specific nerve roots or cord levels under question.

Data on normal subjects have been reported for several segmental levels. Most studies have focused on lumbosacral or cervical level inputs. Our laboratory has collected normative data for cervical, thoracic, and lumbosacral dermatomes.

We have demonstrated the diagnostic usefulness of segmental SEPs by comparing the effectiveness of dermatomal SEPs and electromyograms in patients with lumbar spinal stenosis. Of 26 patients who met all criteria after computed tomography, myelography, or both, 25 (96%) had abnormal SEPs bilaterally. By comparison, only 15 (59%) showed bilateral abnormalities by electromyography, suggesting that segmental SEPs are more likely to detect the root levels that are involved in spinal stenosis. A similar percentage of abnormality (95%) by dermatomal SEPs was reported recently in a study of 20 patients with disc disease and lumbar canal stenosis. These percentages are higher than those reported in earlier studies of lumbar radiculopathy, probably reflecting that the efficacy of segmental SEPs in identifying root abnormalities associated with spinal stenosis is greater than with disc disease.

In segmental cervical level analysis, both nerve trunk and dermatomal SEPs are helpful in diagnosing root disease and identifying sensory levels in guadriplegia, although not all would agree as to their use. It is probably reasonable to say that at the cervical level SEPs serve best as an adjunct to other electrodiagnostic studies.

At the thoracic level, it was found that in two thirds of 37 patients studied, the level of conduction impairment was better located with thoracic dermatomal SEPs. Although more study of segmental SEPs needs to be done at the thoracic level as well as cervical and lumbar levels, these SEPs hold promise for a useful, noninvasive test of cord and nerve root function.

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Objective Measures of Lumbar Strength

BACK pain is the most frequent cause of limited activity and lost time from work for persons younger than 45. About 80% of people will suffer at least one attack of significant back pain in their lifetimes, and 90% to 95% will recover within three months. The small percentage of patients who do not recover account for more than 80% of the medical costs for all patients with back pain. As back pain becomes chronic, the results of treatment decline dramatically. After two years less than 10% of patients will return to work or to moderately strenuous activities no matter what treatment is given.

Rest, medication, passive symptomatic physical therapy, and surgical therapy—in properly selected cases—are common early treatments. For patients for whom these treatments initially fail, however, prolong bed rest, increased doses of medication, more hot packs, and a second operation have all been shown to aggravate rather than alleviate chronic pain.

Epidemiologic studies showed a tenfold increase in back injuries for the least fit firefighters compared with the most fit of that same group. A study using isometric strain gauge testing of strength showed that the incidence and severity of work-related lifting injuries were directly related to a worker's relative strength compared with the job requirements. In 1981 the National Institute of Occupational Safety and Health published guidelines for materials handling that included strength testing for workers who were asked to lift more than light loads close to the body.

The first isokinetic (constant speed) devices for low back testing and strengthening reached the market five years ago. Normative data on trunk flexor-extensor strength in normal persons and in those with back injuries became available. Studies showed that a population with chronic low back pain had significant deconditioning in back extensors and flexors and that a ten-week treatment program using strengthening exercises, gym equipment, and simulated work activities could objectively increase strength and return workers to their original jobs. A control group treated with standard methods had half the success and twice the long-term costs. Objective measures of the body's ability to perform certain functional tasks were found to be more helpful than the patients' subjective reports of pain.

Subsequent studies have confirmed that patients with and without operations showed substantial benefits from education, training, and strengthening when the pretreatment deficits could be objectively quantified and when progress during treatment could be followed objectively. The initial isokinetic testing is most commonly combined with a half-to-two-day tolerance testing of simulated work environment (physical or functional capacity evaluation). Subsequent testing during and after treatment and to determine a return to work or vocational rehabilitation status.

Isokinetic strength measurement is not in any way diagnostic of the underlying pathologic condition. Deficits in strength and endurance in patients with no definable disorder may be similar to those in patients with severe disease. The data are reproducible, with most patients showing 10% to 25% variability during subtests of a single test. Patients can be trained, however, to accurately reproduce submaximal effort. Inconsistent test results (varying more than 25%) are seen in patients with submaximal effort, elaborated pain drawings, elevated scores on the Minnesota Multiphasic Personality Inventory, "ratchety" give-way weakness, or inconsistent straight-leg raising (positive Waddell's signs). Patients with a notable functional overlay often refuse conditioning programs and do not show incremental increases in strength.

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Self-Defense for People With Disabilities

BECAUSE disabled persons are often perceived to be powerless, helpless, and unable to protect themselves, they are often targets for violent crime, including homicide, assault, rape, and robbery. Recent studies have documented that elder abuse is most widespread among elderly people who have physical or mental disabilities, that about 100,000 disabled women annually are victims of rape, that wife abuse is especially widespread problem, in the deaf community, and that there is a significantly increased incidence of physical and sexual abuse of children with developmental disabilities.

Although people with disabilities may have certain limitations, such as vision, hearing, speech, or mobility, they are usually able to develop other capabilities and to draw on available resources to protect themselves. Underestimating a patient's capabilities can be as devastating as overestimating them. Therefore, physicians should encourage persons with handicaps not only to be aware of their vulnerability but also to take sensible precautionary steps for their own safety.

Self-defense training for disabled persons is becoming increasingly available through medical rehabilitation centers, community crime prevention groups, and martial arts classes. Three major types of defense are prevention, psychological defense, and physical defense. Prevention occurs through precautions to reduce vulnerability at home, work, school, on the street, while traveling, and through social encounters. Along with prevention, psychological preparation is important—thinking through what to do in a given situation, knowing the options, assessing one's abilities and limitations, avoiding looking or acting like a victim, acting assertive and confident, and identifying resources int the community for the development of preventive measures. Surprise is an assailant's advantage; that advantage can be reduced by practicing, both mentally and physically, what to do in a physically threatening situation. As for physical defense, there are two main theories of how to respond to an assault: some talk, some say fight. Talk can be used to delay until an opportunity for help or escape is evident. Physical resistance against a firearm is never recommended. Otherwise, current consensus favors being prepared and practicing for an assault situation so that the first two or three moves can be sufficiently devastating to provide time to escape, seek help or sound an alarm. With this as a goal, self-defense training for wheelchair users and persons with other disabilities has already proved effective.

Some rehabilitations center offer classes in martial arts such as judo, jujitsu, kung fu, and karate. The practice of routines of self-defense develops the mind to react instantly to threatening situations and teaches persons not to try to stand firm and oppose an attack but to apply the principles of physics and kinesiology to use an opponent's force to convert an attack into a defeat. Although the best defense remains the avoidance of risky situations, if ever a disabled person is under physical attack, martial arts offer an effective means of training for self-protection and survival.

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Neuropharmacologic Interventions in Traumatic Brain Injury

ADVANCES have occurred in the past decade in the rehabilitation of patients with traumatic brain injury that have altered the approach to this condition. Treatment has been extended, moved out of hospital settings, and directed toward cognitive, behavioral, and social as well as physical deficits. Neuropharmacologic management is a second and complementary innovative approach that offers additional benefits to survivors of brain injury. Nearly all investigation in the past of the pharmacologic treatment of traumatic brain injury was concerned with the acute phase of the injury. The goal of such treatment has been to prevent immediate complications, to minimize the severity of the initial injury, or to manage severe or emergency behavioral disturbance (violence). Neuropharmacologic methods had not been developed to manage the irreducibe chronic behavioral and cognitive losses of brain impairment.

With a recognition that behavioral and cognitive deficits of brain injury constitute the greatest barrier to maximal independence, the possibilities of neuropharmacologic methods to ameloriate these chronic deficits have become evident. The goal of such treatment is to suppress undesirable behavior and augment adaptive behaviors. Traumatic brain injury produces specific—but to a large extent unknown—neurophysiologic (including neurotransmitter) disturbance. This disturbance contributes to a variety of functional deficits, including frontal, temporal, and information processing. Theoretically, it seems rational to administer agents that act to counter transmitter deficits or imbalances, remediating the internal milieu of the damaged brain, and thus to some extent "normalizing" brain activity.

It is appropriate to consider these psychopharmacologic approaches in at least four clinical situations or syndromes. These are decreased arousal, hyperarousal and agitation or aggression, affective disturbance, and cognitive impairment. Stimulants and dopaminergic agonists are most often reported useful for underaroused patients. A large and growing list of potentially useful agents is available for hyperaroused or aggressive patients, including the high-potency neuroleptic agents (traditionally the agent of choice for this indication), lithium carbonate, B-blockers, anticonvulsants (especially carbamazepine), tricyclic (and other) antidepressants, stimulants, and antianxiety agents. For affectively depressed patients, antidepressant drugs are appropriate. The diagnosis of depression in this organically impaired population is a challenge, however, as patients' internal mood states may be inaccessible because of aphasia, agnosia, or frontal impairment. Biologic signs of depression such as psychomotor retardation; sleep, sexual, and appetititve disturbance; and weight loss may all reflect direct deficits of the neurologic injury itself, thus confounding diagnosis. Secondary mania and hypomanic states also clearly result from brain injury and appear to respond to the use of lithium and carbamazepine.

Cognitive disorders are the most common and important deficits in patients with traumatic brain injuries. Because impaired cognition is an almost universal consequence of brain trauma and because even modest gains could have tremendous functional consequences, further investigation is warranted of potential clinical benefits of agents such as stimulants, antidepressants, dopaminergic agonists, neuropeptides, and other drugs reputed to enhance cognitive activity, such as piracetam.

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Computer-aided Quantitative Analysis of Diagnostic Electromyogrphy

CLINICAL Electromyography (EMG) is extremely useful in evaluating patients with neuromuscular diseases. During that part of the study involving the examination of muscles with intramuscular needle electrodes, a physician engages in a dynamic, interactive process with a patient as the data are recorded. In conventional EMG, interpretation is subjective and the results are reported in descriptive terms.

Manual methods of EMG quantitation have existed for many years but have not been adopted into routine practice because the benefits are outweighed by the disadvantages of being tedious and time-consuming. In the past few years, however, with the availability of equipment with rapid digital processing capabilities, strong interest has developed in the quantitative analysis of needle EMG. Software programs have been developed that offer a range of possibilities in two broad categories of analysis, namely the quantitation of motor unit action potentials and the interference pattern. In analyzing the motor unit action potentials, the potentials are extracted from the ongoing EMG signal and any of the following variables may be measured—peak-to-peak amplitude, number of phases, number of turns, duration, rectified area within the defined duration, the ratio of area to amplitude, and firing pattern. Studies are usually done on low-threshold motor units recruited during low-level contractions, although some programs permit the extraction of action potentials at higher force levels. The simplest programs assist the operator by measuring the motor unit action potentials, but the electromyographer still must record and display the individual potentials. More advanced programs will extract, identify, and measure motor unit action potentials, providing considerable saving of operator time and effort. Automatic analysis of the interference pattern may include measurements of baseline crossings, peaks, turns, amplitude of deflections, turns-to-amplitude ratio, and the frequency spectrum of the signal.

Reference data recorded from normal subjects are available for some of these measures, especially motor unit action potential analysis at low efforts and analysis of the turns: amplitude ratio of the inference pattern. Comparable reference data for the other measures are being reported as more experience is gained with them. It is relatively easy for electromyographers to develop their own laboratory norms because the equipment has become standardized and the software easier to use.

The opportunity for easy quantitation of the EMG signal will influence the way electromyographers approach diagnostic EMG in those patients in whom pathophysiologic changes are most apparent on needle examinations, such as those with generalized disorders (myopathies and denervating diseases). Conventional EMG examinations, performed by observation, analyzed subjectively, and reported descriptively, will remain acceptable practice in routine diagnosis. Automatic quantitation, however, allows a more detailed and thorough analysis of the pathophysiology of the disease process and hence a more valid basis for diagnosis. The severity of a disease process is quantifiable, and the presence of special or unusual features, such as mixed patterns in some patients with inflammatory myopathies, can be recognized. Quantitation of the EMG offers considerable advantage over conventional subjective EMG interpretation for detecting the progression of disease in follow-up studies.

Despite the technical advantages of computer-aided quantitative analysis, it is still not possible for a technician to independently record an EMG for the subsequent interpretation by a physician. On the contrary, EMG examination is now more demanding of physicians who must remain attentive to the details of the technique and the proper use of equipment. Computer-aided quantitative EMG analysis provides clinical electromyographers an additional array of specific procedures, any of which may be selected to enhance the diagnostic study in any given patient.

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Deep Vein Thrombosis in Patients With Spinal Cord Injury

PATIENTS with acute spinalcord injury are highly prone to the development of deep vein thrombosis. Deep vein thrombosis delays rehabilitation, prolongs hospital stays, and hence increases the cost of care. Important complications are pulmonary embolism, which is often fatal, and the post-thrombosis syndrome with permanent swelling and edema in the leg. The factors contributing to the high incidence include stasis following paralysis and immobility, hypercoagulability of blood, tissue trauma, and infection. The risk is greatest in the first three months after injury and declines after six months. During the acute phase, and increase in the platelet responsiveness to collagen and an increase in the ratio of factor VIII antigen to factor VIII C has been reported.

The reported incidence of deep vein thrombosis in patients with spinal cord injuries has been decreasing during the past decade because of earlier admissions to hospital, better diagnostic methods, and aggressive prophylaxis or therapy, but it still remains in the range of 10% to 25%. Clinically, contrast venography remains the gold standard of definitive diagnosis, although radionuclide scanning is also an accurate means of diagnosis, has the added advantages of detecting pelvic vein thrombosis and active heterotopic ossification, and can be used on a limb with a cast.

A prophylactic regimen in current use includes fixed-low-dose subcutaneous heparin (5,000 units every 12 hours), adjusted-dose subcutaneous heparin to keep the activated partial thromboplastin time (PTT) at a desired level, low-dose warfarin sodium, pneumatic compression and aspirin, pneumatic compression alone, and functional electrical stimulation alone or in conjunction with any of the above. Fixed-dose subcutaneous heparin is the most commonly used regimen. It can reduce the incidence of calf vein thrombosis substantially compared with that in patients not given prophylaxis. The failure rate, however, for a adjusted-dose regimen aimed at maintaining the activated PTT (six hours after the evening dose) at 1.5 times the control value has reduced the incidence of deep vein thrombosis to 7%, but hemorrhagic complications occurred in 24% of the patients.

The current clinical approach of choice to prophylaxis for deep thrombosis is to tailor the regimen individually, especially with regards to the dose type, route, and duration of anticoagulation. The flexible approach is guided by the degree of hypercoagulative risk present in each patient as assessed from the combined clinical and laboratory data. This includes the general risk factors, local condition of the limb, the period after injury, the degree of spasticity of the limbs, ambulation, infection, hemorrhagic risk, anticipated surgical procedure, previous history of thromboembolism, drug interaction, and the patient's compliance. Laboratory tests indicating hypercoagulability include a short activated PTT, a high-dose requirement for anticoagulation, a high fibrinogen value, and an increased level of fibrin degradation products. The dose of subcutaneous heparin is modified from Leyvraz and colleagues. If a patient is at a low risk, 5,000 units of heparin is given subcutaneously every 12 hours. The dose is increased until the activated PTT, determined just before the morning dose, reaches the upper limit of the normal range (37 to 40 seconds). If the total dose exceeds 20,000 units in 24 hours, the injections are given every 8 or even every 6 hours to avoid high blood concentration of heparin. If the patient is at high risk and the total heparin requirements exceed 30,000 units a day, the heparin is given intravenously until the risk, heparin requirements, or both are reduced. High-risk patients are anticoagulated during perioperative periods. The anticoagulation regimen is not withdrawn simply at the end of an arbitrarily defined period—such as 8 to 12 weeks—but only when the patient is considered to be reasonably out of risk. An unresolved risk is covered with anticoagulation therapy on a long-term basis. Our experience with the use of this regimen shows a failure rate of less than 5% and no significant hemorrhage.

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Clinical Performance Data in Learner Needs Identification

Applying the Quality Assurance Process to Continuing Medical Education

MARVIN GARRELL, M.D.

ABSTRACT—Effective learning is best defined as performance change when change is needed. The best organization for dealing with learner needs is the hospital. Patient care data can be aggregated within a hospital and will provide a large enough sample to be reliably assessed. Discovering the data, identifying personally with the data, and perceiving change are achievable at the hospital. The director of medical education has a responsibility to develop curriculum for the learners from performance data. Examples are presented.

WE are still seeking the optimal conditions for learning by practicing physicians. Within institutions and medical societies, research is needed in the area of how physicians learn, how they may wish to learn, and under what continuing conditions effective learning is achieved. Nevertheless, even without data, certain impressions can be formulated. Learning obviously takes place in many ways: journal reading, tape listening, local hospital conferences, distant conferences, bedside rounds, receiving or giving consultations, peer review evaluations, committee participation, and a host of unorganized but important peer encounters in daily patient care.

Effective learning is best defined as performance change when change is needed. Cognitive knowledge is measurable conversationally, as well as by written and oral examinations. Applied learning cannot be measured alone through cognitive knowledge testing. One may pass a test and still not apply the information to patient care. Physician skills demonstrated by application to the care of patients are the ultimate measure of the effectiveness of continuing medical education.

It is my impression that medical teaching and physician learning are best done in the environment in which the physician works and deals with clinical problems, the office and the hospital. Learning from reading or conference attendance is confirmed when the lesson learned is applied to an actual patient problem. This may happen only by chance if left to individual memory for its application. Learning from office practice requires recognizing a lack of knowledge or a lack of a skill in patient care. This requires on-the-spot awareness of deficiency, but may not result in a change of practice style unless there is sufficient insight into the need to change.

For most physicians in the United States, the best organization for learning is the hospital. Most physicians care for patients with many problems in the hospital, and peer encounters are more common here. Hospitals present an opportunity for physicians to socialize and to share ideas and their experience in medical practice. Data for patient care problems are available because of the hospital and its records; most hospitals are large enough to have adequate samples of clinical data, or, if not, data may be regionalized. Hospital data may be used to discover learner needs, and to assist the learners themselves to discover their needs, identify personally with the data, and perceive it as applicable to their own daily work.

Like most adults, physicians are motivated to learn when they recognize a discrepancy between what they know and what they need to know. Stated another way, they need to know what they don't know. It may seem surprising, but test results with high standards and good grades are not always correlated with performance. Even post-testing of conference material can be followed by no change in professional activity. Performance data, well organized and critically applied, appear to give best results in producing change. This is an epidemiological approach.

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The comments that follow will give examples of the use of data in education, and in effecting subsequent change.

Why use data about patient problems? Why not just pick a subject, talk about it, read about it, or watch it on a screen? When the subject is taught with skill, it is always presented with data to justify or explain the conclusion. The thesis of the presenter derives from his data; his conclusions are validated by his data. The scientific method is applied. Why do we shy away from applying the scientific method to learner needs? Who decides or how should educational merit be decided?

Ask the question, what needs to be learned? Where are the data to answer this question? The data appear in the millions of patient care experiments recorded in patient records by thousands of doctors, the same kinds of records that were used to provide the data for the last published journal article of clinical merit. Don't ask what shall we teach, but rather, what do we need to know? Any one medical record has historical information, physical examination data, investigative findings, management processes, therapeutic applications, and narrative commentaries. Who should read it, who should remember it, how should it be compared, and by what standards would quality of care be determined?

Can the data organization in itself imply the learner needs? If we could have the skill to organize the data so that certain questions of learner needs would always appear, then we would not leave it to chance to discover the right questions to deal with.

Let us go to the tools we need universally, and that are now best found in the hospital. The *sine qua non* is a well designed medical record information system. The system may be manual but the data are too numerous and defy human memory retrieval; computer assistance is required. Skilled people to do the tasks are essential. The information system, if automated through computer technology, must meet several other requirements to fulfill its function. The data collected must pertain to patient care, must reflect both process and outcome. Patient care is continuous. The reports must be available often enough to record change, either by chance or as a result of educational effect. The programs must have the capability to tabulate, analyze, and display essential data in a meaningful way to provide parameters of comparison. The system must have quality control to assure that by the best means available the data are accurately displayed. We cannot afford the disappointment of the "garbage in, garbage out" problem.

Since 1965 St. Vincent's Medical Center of Bridgeport has committed itself to using computer technology in its attempt to provide adequate data retrieval for educational needs. Our largest experience in the past has been with using the Commission on Professional and Hospital Activity program, Quality Assurance Monitor (QAM).[1] Although its title appears to denote monitoring rather than meeting learner needs, all the thousand critical data elements reveal potential learner questions. The organization of the computer printout readily displays potential learner needs. Many unused blanks in the computer system allow for innovative data inserts at the discretion of the subscriber. The system provides for the physicians of the hospital a multitude of programmed questions, the display of which implies learner needs. Thus, it is not left to chance to ask the questions and to discover performance deficits and, therefore, learner needs. These needs are there for the reading. The data set remains stored, and other questions with regard to learner needs may be asked of the same data set. These manual or computer reports help to identify learner needs in the hospital medical staff as a whole, or for a single speciality, a disease complex, an operative procedure, or the basic care of all patients. Determining how to select which data to store and which data to display is an ongoing experiment.

The following are examples. One of the sets of data concerned lower extremity phlebitis.[2] The data were organized so that all the patients with this final diagnosis were grouped into one set and displayed to fulfill the elements of validation of diagnosis, anticoagulant therapy, and mortality. Validation of diagnosis requires either an abnormal venogram, phlesmography, or doppler ultrasound. In the second quarter of 1977, 10 patients were diagnosed with phlebitis. The only diagnostic studies done were two venograms, one of which was normal. The physicians were relying on the history and physical examination findings even though the literature universally discredited Homans' sign, and called for the laboratory confirmation of the diagnosis. Appreciation of this data resulted in multiple conferences devoted to patient care problems involving phlebitis, embolus, and anticoagulant therapy. Universal use of venography resulted, followed by purchase of phlesmography equipment. In the third quarter of 1978, 15 patients had an initial diagnosis of phlebitis, which was confirmed in only 10 by abnormal venograms. Thus five patients were spared prolonged hospitalization and unnecessary therapy.

Periodically, the same set of data is subject to screening, so that slippage from learner achievement will readily be apparent. Could this learner achievement occur without using these clinical data? Certainly, but this model bridged the physician's learning from his almost passive home reading to active group identification of a performance deficit. Will this method supply all our educational needs? Not now, but perhaps someday, if we can become qualitatively and quantitatively more sophisticated.

In 1976 a large university hospital reported a 75% failure to diagnose and treat as the result of abnormal screening serological tests for syphilis.[3] The 1976 St.

Vincent's data revealed that 12,000 patients were screened and 58 abnormal, serologically florescent treponema antibody tests were part of the data set. Only 10 diagnoses of syphilis had been recorded, commented upon, or tested. In-depth investigation revealed the problem to be at two levels. The larger component was mismanagement of the hospital and health department information process, in that the abnormal test was usually being filed after discharge and without direct notification of the physician. Nevertheless, a significant number of patients with information in the physician's hands were still not diagnosed because a sampling revealed that many physicians did not recognize that 85% of the time the diagnosis of syphilis is serologically dependent and not based on history or physical findings. The information process mismanagement was corrected and 100% of abnormal serological tests are now appropriately followed through.

Anemia—what do we need to learn about anemia, or do we have to have another conference on the subject? Everybody knows that we should no longer use panhematemics (Vitamin B_{12}, folic acid, and iron in one pill). Everyone knows that in-hospital iron deficiency anemia requires a careful search for gastrointestinal malignancy and the diagnosis must be validated. Do we? Look at the data. But first write out the critical elements for the comprehensive management of iron deficiency anemia, not a laundry list but just the essentials like mean corpuscular volume (MCV) and serum ferritin,[4] hemoccult stools test, barium contrast studies and sigmoidoscopy, no transfusion unless severe hemodynamic risk, and finally only simple oral iron therapy with a discharge plan for response and repeat study when malignancy is not found.

What did we find? Several patients without validated diagnoses, with normal MCVs and serum ferritins, several with panhematemics. Data, again, education, again, but with a new twist. We published a newsletter with multiple choice questions based on deficits in standards or performance. The test revealed some knowledge deficits with the criteria for diagnosing the varying types of anemia. We still need to work on education about anemia. Even today physicians are not aware of the need to screen for B_{12} deficiency in nonanemic patients over age 75, or with any psychiatric illness.[5]

Can we discover goals and objectives through malpractice reporting? Every validated malpractice episode has the potential for eliciting some patient care management principle that has been violated. It takes skill to find the principle that has been violated; another word for principle can be indicator. Once this has been done, it is possible to ascertain whether violating this principle is widespread, with the potential for more malpractice suits if the wrong set of circumstances should occur. All physicians are attentive to stories of malpractice. What has to be demonstrated to the hospital staff are data to show that a similar sort of professional activity may be taking place within their own institution. With this kind of data, we can often retrieve enough patient records to be assured or concerned about the potential of similar malpractice.

One episode occurring in Connecticut may make a point. A 29-year-old obese man was admitted to a hospital's emergency department in coma with Kussmaul breathing and the odor of acetone on his breath. Laboratory studies including serum electrolytes and blood glucose were ordered, an infusion of Ringer's lactate at 75 cc per hour was started and a Foley catheter placed. The patient died five hours later in cardiac arrest, having received 400 cc of fluid and 200 units of insulin. What principles are suggested in this case? The necessity for rapid validation of admitting diagnosis. Review to discover if all diabetics with or without ketosis, but hyperosmolar, receive initially large volumes of fluid, at least one to two liters in 90 minutes, the right kind of fluid, and intravenous potassium within the first four hours or at onset if serum potassium is less than 4 mEq/L. This single set of data can be retrieved in any hospital and either give assurance or make clear the necessity for hospital-wide education. These data can be compared to standards of good care for diabetic ketotic or nonketotic hyperosmolar states. Any education program concerning diabetic coma care can start with a display of a hospital's own data set. Its startle-effect can be amazing. The reader may also discern here the glimpse of a regional system to internalize all malpractice episodes, assess every hospital for similar potential hazards, and start effective change through education. How many DC10s must fall from the sky to assure safety?

Many hospitals have the opportunity of learning through the visits of distant traveling professors from a medical school. The common practice is for the host hospital to discover the expertness of the visitor and schedule the conference and topic accordingly. It is harder work for the educational leaders to discover learner needs at the local hospital and communicate this to the visiting professor in a timely fashion. Sometimes, the professor is advised by the director of medical education of a continuing problem because of the director's own consultative practice. What would be best would be to have objective data on knowledge, skill, and performance available to the professor. The lecturer could, at least in part, focus on developing the knowledge base for which needed change has been demonstrated.

The reader might, at this point, begin to feel anxious if it were true that all continuing education must be based on data from physician performance. He should feel even more anxious if, as a medical educator, he has no system for discovery of learner needs, and continues on with the day-to-day activity of speaker conferences. The development of this concept in a hospital is slow and its application can be limited by its scope. However, in the evaluation of education effectiveness, measurement of what physicians need to learn and measurement of what they actually do is more important than inviting visiting lecturers to speak on their pet subject.

Conclusions

Quality assurance should primarily assess patterns of health care, not isolated events. A physician experiencing a problem in care is often not alone; other members of the medical staff may have similar patterns of care that could be improved. Retrieval of performance data must be systemically planned, and computer technology is an asset. Singular efforts to discover single events will have minimal impact in developing continuing education curriculum content or in improving care for large groups of patients.

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AIDS Mortality

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Hispanic children one to four years of age, and the second leading cause of death among black children one to four years of age, exceeding deaths from unintentional injuries among Hispanic children and from all other infectious diseases among both groups.[4]

Surveillance for AIDS cannot identify deaths among persons in whom HIV infection or HIV-related illness has not been diagnosed; however, AIDS surveillance does identify most deaths among persons diagnosed as having HIV infection. From July 1986 through June 1987, 3001 death certificates listing diagnoses that indicate HIV infection/AIDS were filed in New York City; of the deaths registered by these certificates, 85% were among persons who met the CDC AIDS surveillance case definition, 6% among persons who would have met the definition if HIV serology results had been available, and 9% among HIV-infected persons with illnesses or conditions not included in the AIDS surveillance definition.[5] When the effects of underdiagnosis and underreporting are considered, AIDS surveillance identifies 70%-90% of HIV-infection—related deaths and, therefore, provides a minimum estimate of HIV-infection—related mortality.[3 CDC, unpublished data]

In addition to mortality statistics, measures of the public health impact of HIV infection/AIDS include morbidity, disability, and health-care costs. For example, the HIV infection/AIDS epidemic is straining the resources of public hospitals;6 in 1989, private insurers paid more than an estimated one billion dollars for reimbursement of AIDS-related claims for life and health insurance, an increase of 71% from 1988.[7]

An estimated one million persons in the United States are infected with HIV;[8] of these, an estimated 165,00-215,00 will die during 1991-93.[8] The impact of HIV infection/AIDS on mortality in the mid-1990s to late 1990s and early 2000s will depend on present efforts to prevent and treat HIV infection.

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Foreign-Born and Educated Physicians in Connecticut Who Have Not Entered Residency Training

ALAN B. DOUGLASS, B.A.

ABSTRACT—Twenty-seven foreign-born, foreign-educated physicians who had not yet entered residency training were located in the Hartford, Connecticut area. Twenty-two completed a written survey and were interviewed. Fairly complete information was available on another two, for a total of 24. The physicians fell into two distinct groups. One group of young, single physicians with an average of two years of experience after medical school, were in the United States on student visas for further training, and generally planned to return home upon completion of training. The second group were older, experienced physicians who had come to the United States with their families for political reasons and planned to settle here permanently. Both groups had great difficulty passing FMGEMS Part I, but few had problems with Part II. Ninety percent were preparing at a commercial test preparation center, and 42% were employed, almost exclusively in the health-care field. Forty-four percent had been observers in a Connecticut hospital. The presence of these individuals, especially the older, more experienced group, raises many public policy questions in the areas of physician evaluation and licensing in the United States.

Introduction

SINCE colonial times, physicians trained outside of the United States have represented a significant source of American medical manpower. All American physicians were originally trained in Europe, and even after the founding of the first two medical schools in the United States by physicians trained in Scotland, many physicians sought to further their education in the great European medical centers.[1] This tradition continued right up until the mid-1930s, when the rise of Hitler's Nazi Germany resulted in the immigration of huge numbers of doctors from Europe. After the war, many more came to the United States for education and were accepted as part of a goodwill act to improve medical care in friendly nations.[2] In the 1960s, foreign-born and foreign-educated physicians became an increasingly important part of the United States physician pool as a result of the expanding population, the health manpower needs of the Vietnam War, and the limited capacity of American medical schools.[2] Until 1977, when new legislation was enacted and associated national policies changed, it was relatively easy for foreign-educated physicians to enter the United States; they were generally offered high priority visas because the United States Labor Department had declared that physicians were in short supply.[2]

This situation changed in 1977 for a number of reasons. There was concern that if foreign-trained doctors continued to enter in large numbers they would compete in a major way with graduates of United States medical schools. There was also a growing awareness of the extent of the "brain drain" of qualified professionals from other countries, and the extent to which the United States was involved in fostering it. Congress passed the Health Professions Educational Assistance Act (Public Law 94-484), based on the recommendations of the Coordinating Council of Medical Education, stating that a shortage of physicians no longer existed in the United States. It was, therefore, no longer necessary to grant high priority preference to alien physicians. The Graduate Medical Education National Advisory Committee (GMENAC) report of 1980 projecting a surplus of physicians in the United States by 1990 seems to have further reinforced this view.[3] Still, despite the legislation, doctors in this country who

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received their medical education abroad remain a stable 23% of the United States physician supply based on American Medical Association databases, and may actually be even higher.[4]

The 1977 act set up new regulations with which foreign medical graduates had to comply before they were eligible for state licensure to practice medicine without supervision. Under the act they must first obtain certification from the Educational Commission for Foreign Medical Graduates (ECFMG). To do this, they must pass an examination, originally called the Visa Qualifying Examination (VQE), then the Educational Commission for Foreign Medical Graduates Examination (ECFMG Exam), and since 1982 the Foreign Medical Graduate Examination in the Medical Sciences (FMGEMS). The present examination (FMGEMS) is administered over a two-day period, with Part I covering the basic sciences, and Part II the clinical sciences. In addition they must pass an examination of written English, usually the Test of English as a Foreign Language (TOEFL) or a separate test administered by the ECFMG, and have their medical credentials examined and confirmed. Once this process has been completed, ECFMG certification is granted and the physician is eligible to participate in United States graduate medical education.[5] One or more years of residency training must be completed before the physician is eligible for state licensure, usually granted upon successfully passing the Federal Licensing Examination (FLEX).[6]

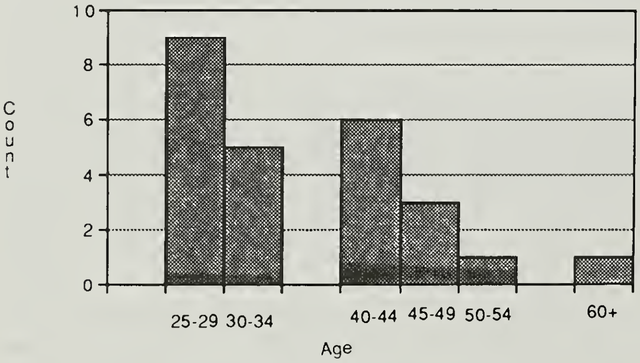

Figure 1
Current Ages

The consequence of this process is that there is a group of physicians who are either studying for the FMGEMS, or, having passed it, are attempting to locate a residency position. Since the examination is offered abroad not all candidates are currently living in the United States, but many are. The result is the presence of thousands of unlicensed and mostly non-ECFMG certified doctors living in the United States who constitute what has been termed "The Medical Underground."[7] Very little is known about the size, distribution, characteristics, and activities of this population. The only attempt at characterizing this group was made in California in 1983 by Smith and Fowkes who located 1,210 "unlicensed FMG's" statewide.[2] That group, however, included a large body of residents who had in essence already entered the system. There has been great concern about whether these doctors are engaged in work in the health-care system, or if some are involved in direct patient care.[2] A 1974 study found 48% of them working in the health-care field, and 73% of them doing jobs usually reserved for licensed physicians.[7]

The purpose of this project was to assess the size, characteristics, and activities of the group of physicians in the Hartford area who are part of this "underground" by virtue of having not yet entered residency training.

Procedures

This population is difficult to define. There is no central listing of these physicians except for a confidential one maintained by the ECFMG, and since many of them are recent immigrants and have not yet applied for ECFMG certification, it is not a complete one. Many of them tend to be suspicious of anyone seeking information about them, as many are refugees from police states and fear that somehow their chances of receiving ECFMG certification or even being able to remain in the United States might be in jeopardy. Most have encountered discrimination of some sort since arrival in the United States, and this has made them all the more wary. They may know a few other physicians in situations similar to their own through contacts with countrymen or at a commercial test preparation center, or they may not. For these reasons, it was impossible to arrive at a reliable estimate of the number of physicians in the Hartford area who are part of this group before the study commenced. Therefore, random sampling of the population and statistical analysis was not possible. Instead, efforts were made to interview all physicians who could be located.

Information on Connecticut's foreign national foreign medical graduates (FNFMGs) who had not yet entered residency training was gathered through the use of an anonymous survey administered by mail and personal interviews. FNFMGs were located through a network approach. Identification sources included commercial test-preparation centers, hospitals, international student advisory offices, the National Residency Matching Program, personal contacts, local ethnic communities, and most importantly word of mouth. The procedure for contacting physicians was designed to protect confidentiality. The anonymous survey was distributed through contacts or by mail. Respondents were given the option of including their name and a contact telephone number on a separate sheet if they were willing to meet with me for an interview, and all did. Interviews were conducted in a variety of settings, all chosen by the physician involved.

Results

A total of 27 foreign-born and educated physicians were located. Twenty-two completed a survey and were interviewed; five could not be contacted, but fairly complete information about two of them was obtained through friends. As a result, the total number of individuals represented in the data tables is somewhat variable. Of the 27, two were studying English full-time with the intent of beginning preparation for the FMGEMS as soon as they were able, 21 were studying for the FMGEMS full or part time, two had received ECFMG certification and were actively seeking residency positions, and two had received ECFMG certification but had been unable to obtain a residency position. They have given up and are now pursuing other careers.

All subjects were wary when first contacted, and were willing to respond only after receiving a recommendation from a colleague or friend and having heard or read a complete description of the purposes of the project, who it was funded by, and how and in what form the information gathered would be used. After that almost all were open and willing to be interviewed.

Medical Education and Training

This group of physicians received their medical education in a wide variety of countries (Table 1). Of interest is that almost half studied in Eastern Europe, and all but three of them studied in a language other than English. They received graduate medical education for an average of three years (Figure 4) in a wide variety of specialties (Table 2). Only two were involved in general practice before coming to the United States. There is wide variation in the number of years of experience in medicine (including graduate medical education) after medical school graduation but before entering the United States (Figure 2), but it may be noted that for more than half it was greater than 10 years, and all but one had two or more years experience.

Personal Information

In keeping with the wide range of experience, their ages (Figure 1) vary widely. Forty-six percent are age 40 or older, and none is under 25. Forty-two percent of the physicians are female, 71% are married, and 50% have one or more children.

Visa and Residence Information

There is a great deal of variation in the visa status of this population, but 74% have some sort of permanent status (Table 3). Twenty-two percent are here on student (F-1) visas issued by a commercial test preparation center for the purpose of studying there for the FMGEMS examination. Forty-two percent are in the United States for political reasons, most with official refugee status. This number is different from the proportion of current FNFMG residents here for political reasons, which is only 6.3%.[8] Seventy-one percent indicated that they plan to remain in the United States on a permanent basis. All settled in Hartford because they had family or friends already here, or because they were located here by religious charities.

FMGEMS

Of particular interest are the experiences of the physicians in this group on the FMGEMS examinations. Pass rates on day one of the examination are similar to the July 1988 national pass rate of 25%,[9] with the average physician having failed it twice and planning more attempts. On the other hand, the pass rate of this group on their first attempt at day two is 62%, and after two attempts 77%. The national pass rate in July 1988 was 48%.[9] Only two individuals had not passed Part II after the second attempt. Eighty-five percent of the subjects took a commercial review course to prepare for the examination. Forty-four percent had also engaged in some sort of an observership in a hospital or physician's office.

Table 1
Country of Medical Education

Country	*Number*
Czechoslovakia	1
Haiti	1
Hungary	1
India	3
Iran	2
Jamaica	1
Lithuania	1
Mexico	2
Poland	5
Spain	1
Syria	3
USSR	3
Vietnam	1
Total	25

Employment

Forty-two percent of the physicians surveyed have been engaged in some sort of paid employment since arriving in the United States (Table 4). They have held a wide variety of positions, but most are in the health-care field (Table 4), with the majority involved in some sort of patient contact; four were performing activities that generally fall in the realm of the licensed or resident physician such as performing or assisting in surgical procedures, doing emergency room workups, making surgical pathology assessments, and performing autopsies.

Particular Difficulties Encountered

The group as a whole encountered difficulties in three main areas: language, Part I of the FMGEMS, and locating a residency post when ECFMG certification had been achieved. A large number arrived in the United States speaking little or no English, and learning the language was their first major challenge. Most reached a reasonable level of written and oral fluency, but the final refinements necessary to pass a test of written English or communicate comfortably in a stressful situation such as a residency interview have proved elusive for many. "English is our Gulag," was how one recent Russian immigrant, an otolaryngologist with 25 years' experience put it. "It sometimes seems that we will never finish our sentence."

Part I of the FMGEMS takes on a level of difficulty far beyond the simple challenge of learning huge amounts of basic science. It looms as a seemingly insurmountable peak for many. Stories of repeated scores of 73 and 74 are frequent (75 is passing), leading many to feel it is unpassable, although most, after much perseverance, eventually succeed . "The exam has destroyed marriages," said one physician about to take it for the fourth time. Three physicians struggling with the examination are married to doctors who have passed and successfully entered practice.

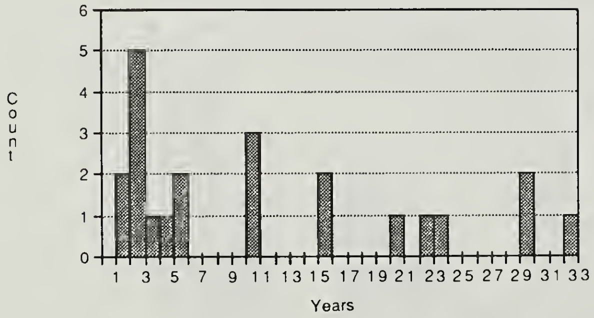

Figure 2
Years of post-medical school experience outside the United States

For those who do pass and obtain ECFMG certification, the struggle does not end. Many apply to 50, or even 100 programs, sometimes without success. Frequently a doctor with a great deal of experience in a competitive specialty such as obstetrics and gynecology or surgery is forced to change fields to a less competitive one, such as internal medicine, in order to obtain a position. What is most demoralizing is a tactic that seems to be used frequently by some programs. The candidate is told at the interview that the program would like to have him or her, and that they will call in a few days with their decision. What follows may be weeks or even months of waiting, ended by a call to report that after much searching the program has finally located an American to fill the post, and so the physician's services will not be required. "The most tough part of being an FMG is being accepted in a residency program of your choice" was the comment of a Syrian surgeon who had been through this cycle twice without success and was still waiting to hear from a third program.

Discussion

The Population

The 27 physicians located for this study appear to represent most if not all of the July 1989 Hartford-area population of foreign-born and educated physicians who have not yet entered residency training. Because most individuals were located through word-of-mouth there is the possibility that a few physicians who were studying on their own and did not know any other local physicians may have been missed. However, because of the apparent pervasive use of the commercial test preparation center, it seems unlikely that many were not located. Based on discussions with a number of individuals there appears to be a population of a similar size in the New Haven area, which is also a major medical center and the location of another commercial test preparation center. However, after three months of attempts through a number of different channels, contact was not made with a single physician in this category in the New Haven area. This is a graphic illustration both of the insularity of these communities of physicians in two cities only 40 miles apart, and the wariness of these individuals about speaking with an unknown outsider.

Subgroups Within the Population

The individuals interviewed in this study fall into two distinct categories. One group is composed of young (Figure 1), single physicians, generally here on student visas (Table 3), who have come here for additional medical training and who plan eventually to return home. It is important to note that contrary to popular belief, these physicians are not new medical school graduates but have completed several years of post-medical school practice (Figure 2) and graduate medical education (Figure 3). When compared to a group of Connecticut resident physicians (unpublished data), they appear to be similar in age, education, training, and future plans. However, they have had more difficulty passing the FMGEMS examination and are more likely to have received their medical education in a language other than English.

The second group is composed of older (Figure 1), experienced (Figure 2) specialist physicians (Table 2), who have come here with their families for political reasons and plan to settle permanently in the United States. All but one arrived speaking no English whatsoever. Some have been medical school faculty, and several have extensive research experience and Ph.D.'s. They differ greatly from the population described in California by Smith and Fowkes,[2] which was mostly young and relatively inexperienced.

FMGEMS

The experiences of both groups on the FMGEMS examination were similar. The difficulty with Part I was understandable and predictable, given that a number of years had elapsed since the subjects had studied the basic sciences on the examination. The documented multiple attempts are predictable as anyone who had passed Part I on the first try in all likelihood also passed Part II and therefore would not have been located. Data for 1988 from the ECFMG indicate a similar pass rate for Part I to that of these physicians.[9] This is surprising since it has been documented that success in passing the examination decreases with multiple attempts,[10] and therefore one would expect a lower pass rate in a group that has made multiple attempts. On the other hand, the success of this group on Part II is surprisingly high, given the published pass rate in 1988 of only 45%.[9]

Language

The matter of language deserves some discussion. Fluency in both written and spoken English is a prerequisite for the practice of medicine in the United States. Performance on the English examination required for ECFMG certification was not specifically investigated as part of this study. However, it is clear that at least some candidates had difficulty. In particular, written English, which is what the examinations emphasize, seems to be much more of a difficulty than spoken English. One Iranian general surgeon, who speaks flawless English and has passed both ECFMG and FLEX, has scored within three points of passing on two separate occasions. Further study in this area may be warranted.

The other important aspect of language is the relationship between the language of initial medical education and later success in obtaining ECFMG certification. Only a few of the physicians interviewed as part of this project had studied medicine in English during medical school. However, almost half of the FNFMGs currently in residency training in Connecticut (who have already received ECFMG certification) studied medicine in English (unpublished data). This observation suggests that the language of initial medical instruction may be an important factor in gaining ECFMG certification.

Geographic Considerations

The national origins of the physicians located in this study were considerably different from those of FNFMGs in residency programs. Three countries, India, Pakistan, and the Philippines, supply more than a third of all FNFMG residents,[8] and yet only one of these nationalities was represented in the study population. On the other hand, there were many Eastern European physicians in this study, although there were few in American training programs.

Although the Hartford area is a major medical teaching center, it is not a major focus of immigration except for Puerto Ricans,[11] Poles, and Soviet Jews.[12] All subjects settled here because of the presence of family, friends, or religious charities in the area. This suggests that the numbers of physicians who have not yet entered residency training may be much higher in cities with large numbers of immigrants such as New York, Chicago, Miami, and Los Angeles. It also suggests the possibility of a "second generation" of physician immigrants to the U.S. A number of the younger, less experienced physicians came because they had older friends or relatives who had settled in the area 20 or more years ago when immigration was easier.

Commercial Test Preparation Centers

It is important to examine the role of the commercial test preparation center with regard to these physicians. Although most doctors interviewed were identified through the center or by physicians studying there (leading to what may be a very substantial selection bias), the feeling even among those physicians who had little contact with the center was that it was indispensable and perhaps the only way to prepare successfully for the FMGEMS. A Syrian surgeon told me, "Studying for the examination in a new country in a new language without any American textbooks is next to impossible. The Center is your only hope of success." The center provides written and audio review material in all subject areas covered by the examination as well as huge numbers of past examination questions. All materials are produced by the center's research staff, "under the supervision of a physician" (interview with test center director, 28 June 1989). The center does all the sifting, condensing, and organizing for the candidate. The fees are high, approximately $1,500 for the first attempt and $800 for subsequent attempts (interview with test

Table 2
Medical Specialty

Specialty	*Number*
Anesthesiology	3
Cardiology	1
Gastroenterology	1
General Practice	2
Infectious Diseases	1
Internal Medicine	2
Neurology	1
Obstetrics/Gynecology	3
Occupational Medicine	1
Otolaryngology	1
Pathology	1
Psychiatry	1
Rheumatology	1
Surgery (General)	4
Total	23

director, 28 June 1989), but "passing the exam is your ticket to success in the United States," according to an Iranian obstetrician. The center provides financial aid to many of its clients, and the majority of interviewed were receiving some sort of financial assistance.

Another role that this center plays is to provide entry visas to the United States. It provides the necessary forms to physicians outside the country which allow them to enter on an F-1 student visa to study for the FMGEMS at the center (interview with test director, 28 June 1989). The only stipulation is that the candidates must be able to support themselves financially without employment for the duration of their stay. The most common tactic seems to be to enter on a tourist visa, make arrangements with the center, and then leave the country, reentering on a student visa, and then, once ECFMG certification is achieved and a residency position is obtained, convert to a J-1 non-immigrant visa.

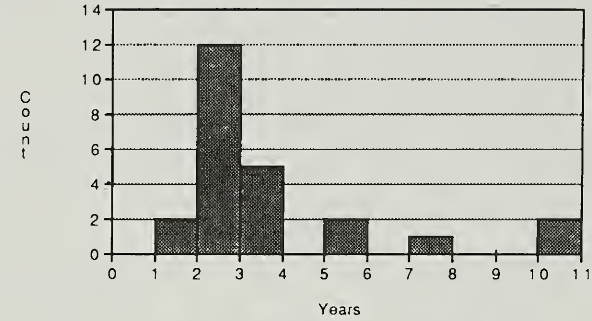

Figure 3
Number of years spent in the United States

Observerships

In an effort to gain some experience in American hospitals and increase their chances of obtaining a residency, almost all subjects spend periods ranging from one to 31 weeks as "observers" in area hospitals. They "shadow" medical students, residents, and attending physicians, and attend conferences and grand rounds. In some cases they are allowed to interview patients or perform minor procedures. No area hospitals have official observer programs, and discussions with medical education directors indicate that these positions are rare with only a few observers in a hospital at any given time. All subjects who spent time as observers arranged them privately through personal contacts with physicians on the hospital staff, often doctors from their home country.

Employment

A matter of great concern in the past decade has been whether or not non-licensed physicians are working in activities legally reserved for residents and licensed physicians. A study in 1974 found 48% of candidates for the ECFMG examination were working in the health-care field, and 73% of them were involved in direct patient care.[7] In this study, although half of those interviewed were working (Table 4), all but two in the health field, only 20% were involved in direct patient care. All were working not because they thought the job would advance their medical careers, but because it was a financial necessity, and the health-care field was one they knew.

Another important aspect of the employment situation is that it is difficult for these doctors to find jobs. They are considered overqualified for any position except that of a physician, and yet they are not qualified to practice medicine.

Proposed Improvements in Physician Evaluation and Licensing

During the interviews, a number of physicians made suggestions for improvements in the current system for evaluating and licensing foreign-educated physicians. The following is a synthesis of those ideas:

All physicians interviewed agreed in principle that physicians licensed to practice in the United States should meet common minimum standards. However, they expressed concern that the knowledge of contemporary basic sciences required of them is higher than that required of the experienced, specialty-qualified physicians who are their peers and do not need to recertify periodically in the basic sciences. "How many 40-year-old doctors do you know who could pass Part I of the FMGEMS?!" asked a Czech anesthesiologist who has attempted Part I of the FMGEMS four times and has yet to pass.

Table 3
Visa Status

Visa type	*Number*
Student (F-1)	5
Immigrant	3
Resident alien (Green Card)	10
U.S. citizen	4
Tourist	1
Total	23

Their suggestions were in two areas: the evaluation of their basic science and medical knowledge, and the assessment of their clinical competence. The evaluation of basic science and clinical knowledge is the realm of the FMGEMS. Most felt it required too much knowledge of details of basic science that have little relevance to the practice of medicine, and perhaps did not go into enough depth in basic clinical medicine. They suggested that the examination be revised in a direction more like that of FLEX, which concentrates on aspects of basic and clinical science more relevant to everyday practice.

The assessment of clinical competence is perhaps a more difficult question. Groups such as the NBME and

ECFMG[13] have struggled for years to find a way to evaluate all of the attributes necessary to practice competent medicine. Extensive utilization of clinical simulations seems to be the only rational way, but the cost of making them suitably realistic and extensive to achieve generalizable results is prohibitive.

It follows that perhaps the best way to assess the clinical competence of a foreign-educated doctor is to have him or her spend a period of time (for example six months) in a closely-supervised setting in an American teaching hospital. Candidates would have the time to adjust to the practice of medicine in the United States and at the same time have their clinical competence assessed over a longer period of time than one day spent taking a multiple choice examination. This would eliminate many of the problems in the present system of evaluation, but implementation of such a program would be costly in both dollars and manpower. It would in essence mean asking teaching hospitals to increase their clinical teaching load. A close look should be taken at Great Britain, where a somewhat similar system is currently in operation.

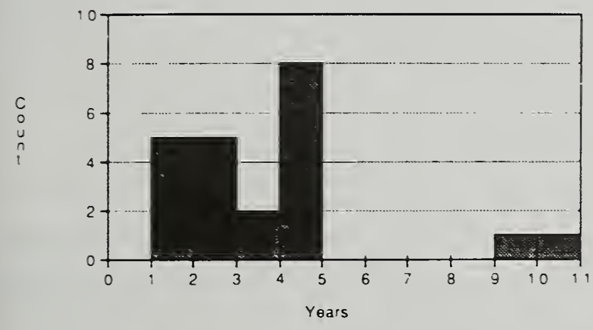

Figure 4
Years of graduate medical education outside the United States

There would be the temptation in light of current shortages of health-care workers in New York and other places to use candidates to "fill the gaps" in short-staffed city hospitals. This must be avoided. The purpose of a six-month clerkship would be to assess candidates in a closely-supervised setting. However, overworked house staff in a busy understaffed hospital are not in a position to do that effectively. All subjects interviewed were enthusiastic about such a proposal. "I would gladly do it for free just to have the chance to show them what I am really capable of!" said a Russian obstetrician who had applied to over 120 residency programs and was not offered a single position.

The existence of the more experienced group of physicians presents a separate set of problems and possible solutions. It could be argued that our present pathways towards licensure are inappropriate for these physicians. It has been an average of 20 years since they completed medical school, resulting in a certain amount of "knowledge atrophy" in the basic sciences. Also, as a Russian pathologist told me, "A great deal of the basic science on the examination has been discovered since I graduated from medical school!" Additionally, all of them are learning English for the first time. After several years of studying English and several more preparing for the FMGEMS, even if they do pass the examination, they are unable to obtain a residency post. Few residencies accept physicians for PGY-I positions who are over the age of 40. On top of it all, "The more time I spend studying for the exams, the more time I am away from clinical medicine. I fear that by the time I eventually enter a residency, if I ever do, my clinical skills will have deteriorated to the point that I will be a danger to my patients!"

The proposal of these doctors is that they be allowed to bypass the FMGEMS in whole or in part and go directly to the board examinations in their specialty. Upon successful completion of the examination, they would be granted a limited license allowing them to practice medicine only within their specialty. There is logic in this proposal, especially in specialties such as pathology that do not involve a great deal of patient contact. However, state licensing boards have been reluctant to act on such proposals when they have arisen in the past.[14] All United States medical licenses certify the holder as a "physician and surgeon" and do not carry any limitations on what types of medicine the holder can legally (as opposed to practically) engage in.

Table 4
Employment Positions Held by the 10 (42%)
That Have Worked

Position	*Number*
Hospital orderly	1
Nurse's aide	1
Surgical physician's assistant	2
Pathology physician's assistant	1
Respiratory therapist	1
Medical office assistant	1
Laboratory assistant	2
Medical research assistant	4
Hospital translator	1
Group home night supervisor	1
Computer programmer	1
Factory worker	1
Handyman	1

Regardless of what changes are contemplated, however, the overriding priority must be to ensure that all licensed physicians in the United States are competent to practice unsupervised medicine. If a proposed variation in licensing procedures cannot meet this standard, regardless of its good intentions, it is not a viable option.

These situations create many questions to which there are no easy answers. America has traditionally been a nation of immigrants, and was founded by individuals fleeing political and religious persecution. In light of history, should these physicians be treated differently from any other group of refugees? Should their professional skills be seen as a valuable asset, a hindrance to their immigration, or of no consequence? There are many parts of the United States that are sorely in need of medical care.

Conclusion

Based on the number of individuals in the Hartford area alone, it is reasonable to assume that FNFMG's who have not yet entered residency training make up a significant proportion of the United States FNFMG population. Further, more extensive studies in such cities as New York, Miami, and Chicago are necessary to determine the exact number of physicians involved. The greatest obstacle facing those interviewed was passing Part I of the FMGEMS. The commercial test preparation center offers help at a price, and has taken on an important role in the lives of these physicians. Most are active in some area of the health-care field, either as employees or observers. A small but important number are involved in direct patient care.

Perhaps most significant was the discovery of a group of experienced physicians who have settled permanently in the United States for political reasons. They raise important questions regarding their ability to compete successfully in our present system of physician certification. Other countries, notably Great Britain, have taken the initiative and adapted to accommodate such physicians.

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AIDS Mortality

Continued from page 92

[*] Single copies of this article will be available free until January 25,1992, from the National AIDS Information Clearinghouse, P.O. Box 6003, Rockville, MD 20850; telephone (800) 458-5231.

[+] The most recent year for which national vital statistics data are available to compare rankings of HIV infection/AIDS with other causes of death by age and sex. Vital statistics data in this report represent deaths for which HIV infection or AIDS was designated as the underlying cause of death.

Reported by: Local, state, and territorial health departments. Div of HIV/AIDS, Center for Infectious Diseases; Div of Vital Statistics, National Center for Health Statistics, CDC.

Editorial Note: From 1981, when AIDS was first recognized, through 1990, more than 100,000 persons in the United States have died from AIDS. The impact of AIDS has been greatest among men 25-44 years of age, contributing substantially to the overall increase in deaths among this group during the 1980s;[3] in addition, AIDS is becoming a leading cause of death among women.

—Morbidity and Mortality Weekly Report, Vol. 40, No. 3, January 25, 1991.

Treatment of Early Stage Breast Cancer

NATIONAL INSTITUTES OF HEALTH

Introduction

CARCINOMA of the breast is the most common malignancy in women in the United States. As a cause of cancer death in women, breast cancer is exceeded only by lung cancer. The incidence of breast cancer has been rising steadily over the past decade. In the 1990's, more than 1.5 million women will be newly diagnosed with this disease; nearly 30% of these women will ultimately die from breast cancer. The increased number of reported cases may be partially attributable to their detection following more widespread use of screening mammography. Most of the increase has been in patients with smaller primary breast tumors. In 1982, approximately 12,000 women were diagnosed with tumors less than two centimeters in diameter and negative axillary lymph nodes. That number had risen to 32,000 by 1986. For those patients with axillary node positive breast cancer, there has been a less dramatic increase in tumors less than two centimeters (3,000 in 1982 to 7,000 in 1986) while there has been a decrease in the number presenting with tumors larger than five centimeters. Of the 150,000 new patients diagnosed with invasive breast cancer in 1990, 75 to 80 % will have clinical Stage I or II disease, and approximately two-thirds of these will have no involvement of the axillary lymph nodes.

Traditional concepts through most of the 20th century held that breast cancer was a local/regional disease best managed by radical mastectomy. Over the past twenty years, there have been several clinical trials worldwide that have compared less extensive breast resections with standard radical mastectomy. These have included comparisons of total mastectomy (with and without radiation therapy and axillary lymph node dissection) with radical mastectomy. Subsequent studies have compared different approaches to breast conservation surgery with total mastectomy. At present, breast conservation therapy is used in a minority of patients. The appropriate use of breast conservation involves a variety of clinical, biological, and psychosocial factors that merit public debate.

Adjuvant therapy has become the standard of care for the majority of breast cancer patients with axillary lymph node involvement. More recently, several randomized trials from North America and Europe have shown an improvement in disease-free survival for node negative breast cancer patients receiving adjuvant therapy.

Absence of metastasis to the axillary lymph nodes has traditionally been considered a favorable biologic condition for patients with invasive breast cancer. However, all patients with node negative breast cancer are at risk for disease recurrence. Intensive efforts to define an individual patient's risk of recurrence have produced a plethora of potential prognostic factors, from patient characteristics to histologic, biochemical, and molecular characteristics of the tumor. The importance of these various prognostic factors has been the subject of controversy.

To evaluate the developing results of breast conservation, adjuvant therapy of node negative breast cancer, and clinical prognostic factors, the National Cancer Institute and the Office of Medical Applications of Research of the National Institutes of Health convened a Consensus Development Conference on the Treatment of Early Stage Breast Cancer on 18-21 June 1990.

After two days of presentations by experts and discus-

NIH Consensus Development Conferences are convened to evaluate available scientific information and to resolve safety and efficacy issues related to a biomedical technology. The resultant NIH Consensus Statements are intended to advance understanding of the technology or issue in question and to be useful to health professionals and the public.

NIH Consensus Statements are prepared by a nonadvocacy, nonfederal panel of experts based on (1) presentations by investigators working in areas relevant to the consensus questions during a $1\frac{1}{2}$-day public session; (2) questions and statements from consensus attendees during open discussion periods that are part of the public session; and (3) closed deliberations by the panel during the remainder of the second day and the morning of the third day. This statement is an independent report of the panel and is not a policy statement of the NIH or the federal government.

From the Office of Medical Applications of Research, National Institutes of Health, Bethesda, MD.

sion by the audience, a consensus panel drawn from specialists and generalists from the medical profession and related scientific disciplines, clinical investigators, methodologists, and public representatives considered the evidence and agreed on answers to the following key questions:

1. What are the roles of mastectomy versus breast conservation in the treatment of early stage breast cancer?
2. What are the optimal techniques for breast conservation?
3. What is the role of adjuvant therapy for patients with node negative breast cancer?
4. How should prognostic factors be used in the management of node negative breast cancer?
5. What are the directions for future research?

1. What Are The Roles of Mastectomy Versus Breast Conservation in the Treatment of Early Stage Breast Cancer?

Breast conservation treatment is an appropriate method of primary therapy for the majority of women with Stage I and II breast cancer and is preferable because it provides survival equivalent to total mastectomy and axillary dissection while preserving the breast.

In general, primary therapy for Stage I and II breast cancer consists of breast conservation treatment or total mastectomy. Breast conservation treatment is defined as excision of the primary tumor and adjacent breast tissue,* followed by radiation therapy. Total mastectomy is an appropriate primary therapy when breast conservation treatment is not indicated or selected. Both surgical therapies are accompanied by axillary dissection, which provides important prognostic information.

Prospective randomized trials comparing breast conservation treatment with total mastectomy with maximum follow-up of 17 years have demonstrated equivalent results as measured by overall patient survival. Important considerations in the choice of therapy for women with Stage I and II breast cancer include clinical criteria, factors that influence local/regional tumor control, cosmetic results, psychosocial issues, and patient preferences for treatment method.

Patient Selection

In the selection of women for breast conservation treatment or mastectomy, certain women are not candidates for breast conservation treatment:

- Women with multicentric breast malignancies, including those with gross multifocal disease or diffuse microcalcifications detected by mammography.
- Patients for whom breast conservation treatment would produce an unacceptable cosmetic result. Examples include women whose tumors are large relative to breast size and those with certain collagen vascular diseases.

Certain pathologic and clinical factors may influence treatment selection because of their potentially adverse impact on local recurrence after breast conservation treatment. Controversy exists about these factors, examples of which include the presence of extensive intraductal carcinoma within and adjacent to the primary tumor, extensive lymphatic involvement, and young age (under 35-39 years). Prospective studies comparing primary therapies have included women whose primary tumors were usually less than or equal to four centimeters in diameter.

Local Control

Local control is a major goal of breast conservation treatment. The incidence of local recurrence is low in appropriately selected patients receiving optimal breast conservation treatment. Results of randomized trials have suggested that the use of adjuvant chemotherapy or hormonal therapy further reduces the rate of local recurrence after breast conservation treatment.

Cosmetic Result

A goal of primary breast cancer treatment is to produce the best cosmetic result consistent with achievement of local/regional control. In clinical trials, the majority of patients achieve good to excellent cosmetic results after breast conservation treatment. Optimal long-term results require integration of careful surgical excision and precise radiotherapy techniques. When mastectomy is indicated or selected, breast reconstruction should be considered to improve the cosmetic result.

Psychosocial Factors

Women should be educated about treatment choices and clinical trial options in order to make an informed decision in consultation with their physicians. A variety of factors have a major influence on a woman's choice of primary therapy. These include logistic and emotional considerations, personal financial issues, and proximity and access to appropriate medical care. A woman's body image and her beliefs and concerns may determine her preference for breast conservation treatment or mastectomy.

2. What Are the Optimal Techniques for Breast Conservation?

The objective of breast conservation is to obtain a high probability of local control, with survival at least equivalent to that obtained with total mastectomy and axillary dissection, combined with maximal cosmetic results and maintenance of normal function. The most widely used treatment that achieves these goals is the combination of local surgical excision, axillary dissection, and postoperative radiation therapy. Although this treatment approach produces survival equivalent to mastectomy, with a high likelihood of good cosmesis and function, further studies are required to refine certain treatment details.

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* This procedure is also referred to as lumpectomy, segmented mastectomy, or partial mastectomy.

The following recommendations define the treatment details deemed optimal based on the available data.

Surgical Recommendations

- The diagnosis should be established by fine needle aspiration cytology, limited incisional biopsy (particularly for larger lesions), or definitive wide local excision.
- The type and placement of incisions can influence greatly the quality of cosmesis. Arcuate incisions with thick flaps, centered over the lesion, are superior to radial incisions, particularly for upper quadrant lesions. Routine excision of overlying skin is unnecessary except for very superficial lesions. Careful hemostasis is essential and drains are rarely necessary. In most instances, suture reapproximation of mammary tissue should be avoided.
- It is appropriate to excise the primary lesion with a normal tissue margin of approximately one centimeter. The intent of this recommendation is to achieve a surgical margin that is grossly and microscopically uninvolved with tumor. To obtain adequate pathological evaluation, it is necessary to mark the specimen for proper orientation and to ink the resection margins. When margins are grossly involved with tumor, further resection is indicated. Available data are inadequate to determine whether focal microscopic involvement of a margin increases the risk of local failure after optimal radiation therapy. Because cosmetic result is related to the amount of tissue excised, unnecessarily wide margins (> 2 cm) should be avoided.
- Because nodal status is the most important available prognostic factor, a Level I-II axillary dissection should be routine both for staging and for prevention of axillary recurrence. Separate incisions should usually be employed for the primary tumor excision and the axillary dissection to enhance functional and cosmetic results.

Radiation Therapy Recommendations

- Megavoltage radiation therapy to the whole breast to a dose of 4,500 to 5,000 cGy (180 to 200 cGy per fraction) should be routinely used. Boost irradiation has been used in the majority of trials to date. However, the precise indications are not well defined. In the reported trials, the patients with focal microscopic involvement of margins have been treated with boost irradiation or mastectomy. There are no current data to support lesser treatment for these patients. Treatment planning should be done to minimize radiation exposure to lung and heart and to achieve uniform dosage to the treatment volume. Boost irradiation should be delivered by electron beam or implantation to doses of 1,000 to 1,500 cGy. Higher doses produce a greater incidence of cosmetic impairment.
- If a Level I-II axillary dissection has been performed, axillary nodal irradiation is not routinely indicated.
- No data indicate any increased risk of secondary malignancies or contralateral breast cancers resulting from breast irradiation. Longer follow-up of this population is necessary to resolve this issue fully.
- Although local control can be obtained in some patients with local excision alone, no subgroups have been identified in which radiation therapy can be avoided.
- In patients receiving adjuvant chemotherapy, no precise recommendations regarding the sequence and timing of radiation therapy and chemotherapy can be made.
- A small percentage of patients will develop a local recurrence following breast conservation therapy. Total mastectomy is effective salvage therapy for a substantial percentage of these patients. This is in contrast to the poor prognosis associated with local chest wall recurrence following mastectomy. Hence, in patients treated with breast conservation, long-term careful breast monitoring with physical examination and mammography is essential for early detection and treatment of local recurrence.

3. What Is the Role of Adjuvant Therapy for Patients With Node Negative Breast Cancer?

- The majority of patients with node negative breast cancer are cured by breast conservation treatment or total mastectomy and axillary dissection.
- There is clear evidence that the rate of local and distant recurrence is decreased by both adjuvant combination cytotoxic chemotherapy and by adjuvant tamoxifen.

Data from the 10 randomized trials reviewed show that adjuvant systemic therapy reduces the rate of recurrence by approximately one-third, with a broad range. For example, among a group of women with a 30% risk of recurrence adjuvant therapy would decrease that risk to about 20%. The role of these treatments in improving overall survival and other important parameters such as quality of life is still being defined.

The completed studies are not large enough, nor is the follow-up long enough, to estimate with acceptable precision the interactions between menopausal status or steroid receptor positivity and the effects of adjuvant therapy in node negative patients. Although all patient subsets experience lower rates of recurrence, relatively few patients with estrogen receptor negative tumors have been included in tamoxifen studies. At the present time, reduced mortality is seen in nearly all trials but is not statistically significant in most. However, the rate of death in node negative patients is low, so a clinically important reduction in mortality may require a long follow-up to achieve statistical significance. For chemotherapy, more benefit is seen in trials in which antimetabolites (methotrexate and 5-fluorouracil) are administered intravenously than in trials in which they are given orally. For tamoxifen, studies using the drug for more than two years (usually five years) seem to result in greater reductions in the rate of recurrence than studies using shorter courses.

In prospective studies in node negative patients, tamoxifen reduces the clinical incidence of contralateral primary breast cancer. The overall benefits from tamoxifen in postmenopausal patients clearly outweigh any toxicities currently described. In premenopausal patients, the administration of tamoxifen may cause endocrine abnormalities with uncertain long-term consequences. Although there does not appear to be an excess number of cases of endometrial carcinoma in tamoxifen-treated premenopausal patients, the follow-up durations are too short to predict confidently whether or not this will occur. The influence of tamoxifen on the developing fetus is unknown.

There are no data now available concerning the effects of combination chemotherapy plus tamoxifen in node negative patients. Trials addressing this issue are under way.

Recommendations

- The many unanswered questions in the adjuvant systemic treatment of node negative breast cancer make it imperative that all patients who are candidates for clinical trials be offered the opportunity to participate.

The following recommendations apply only to patients who are not candidates for such trials or who refuse participation.

- All node negative patients should be aware of the benefits and risks of adjuvant systemic therapy. The decision to use adjuvant treatment should follow a thorough discussion with the patient regarding the likely risk of recurrence without adjuvant therapy, the expected reduction in risk with adjuvant therapy, toxicities of therapy, and its impact on quality of life. Some degrees of improvement may be so small that they are outweighed by the disadvantages of therapy.
- Adjuvant therapy should consist of either combination chemotherapy or tamoxifen (20 mg/day for at least two years).

No completed studies have directly compared tamoxifen with chemotherapy (with or without tamoxifen) in node negative patients. Tamoxifen has less acute toxicity than chemotherapy, but no statement is possible regarding chronic toxicity or comparative efficacy. The results of current and future trials concerning the safety of tamoxifen in premenopausal patients must be followed carefully.

4. How Should Prognostic Factors Be Used in the Management of Node Negative Breast Cancer?

Prognostic factors should be used to provide an estimate of risk recurrence in women with early stage breast cancer. Although no individual patient can be assured that she has no risk of recurrence, the majority of women will be cured with local/regional therapy.

A useful prognostic factor has the following characteristics:

1. It has significant and independent predictive value that has been validated by clinical testing.
2. Its determination must be feasible, reproducible, and widely available, with quality control.
3. It must be readily interpretable by the clinician and have therapeutic implications.

Prognostic Factors

TUMOR SIZE. There is a strong correlation between tumor size and risk of recurrence. Even within the T_1 category, there is variation in risk. Tumors less than or equal to one centimeter have a particularly good prognosis (e.g., <10% recurrence at 10 years) relative to tumors 1.1 to 2 centimeters in diameter. In general, the risk of recurrence increases with increasing tumor size. The pathologist should perform a careful gross examination with documentation of tumor size.

ESTROGEN AND PROGESTERONE RECEPTOR STATUS. Patients with receptor-positive tumors have a better prognosis than those with receptor-negative tumors. However, the difference in recurrence rates at five years is only 8 to 10%.

NUCLEAR GRADE. This is a well-documented factor. When determined by experienced pathologists, it discriminates favorable and unfavorable prognostic groups. High nuclear grade is associated with a higher rate of recurrence. Nuclear grade is not currently part of the routine pathologic review of breast cancer specimens. The pathology community should adopt a uniform grading system and routinely use this discriminant.

HISTOLOGIC TYPE. Several well-characterized histologic subtypes impart a favorable prognosis, although they are a distinct minority of all breast cancer cases. These subtypes include tubular, colloid (mucinous), and papillary types.

PROLIFERATIVE RATE. Measurements of cellular proliferation in breast cancer specimens using a variety of techniques have shown a strong correlation with outcome. DNA flow cytometry has become widely available for the determination of S-phase fraction as well as ploidy status. S-phase fraction does correlate with prognosis, but ploidy status alone is not of clear prognostic value. Up to 25% of specimens are not evaluable by flow cytometry because of methodologic problems. Because of the complexity of the technology, quality control is especially critical. Although S-phase fraction has been shown to be an independent prognostic factor in some studies, its clinical value is being defined.

OTHER FACTORS. High levels of the protease Cathepsin D are associated with an unfavorable prognosis. Data for HER-2/neu, epidermal growth factor receptor, and stress-response (heat shock) proteins are of interest, but further investigation is required before reaching any conclusions about their clinical value.

Estimating Individual Risk

Currently available prognostic factors are associated with a broad range of risk of recurrence in node negative breast cancer patients. There are extremes of high and low risk where it is possible to make recommendations about adjuvant systemic therapy. For example, outside of clinical trials, it is reasonable not to treat patients with tumors less than or equal to 1 cm in diameter because their chance of recurrence is less than 10% at 10 years. With increasing tumor diameter, other prognostic factors should be weighed in the decision to use adjuvant treatment. A major goal is the development of risk profile systems with sufficient accuracy and reproducibility to estimate prognosis in the individual patient.

5. *What are the Directions for Future Research?*

1. To refine existing prognostic factors by:
   - —reassessing the predictive value of the T categories in the AJC-TNM staging system.
   - —standardizing a nuclear grading system.
   - —exploring relationships between individual prognostic factors and resistance to systemic therapy.
   - —developing and using new and existing tissue and clinical data banks for the study of prognostic factors.
2. To develop risk factor profile systems with sufficient accuracy and reproducibility to allow identification of subgroups that:
   - —may be treated with surgical excision without irradiation.
   - —do not require axillary node dissection.
   - —do not require systemic therapy.
3. To improve systemic chemotherapy regimens through:
   - —investigation of dose intensity, timing, and duration.
   - —introduction of new agents.
   - —evaluation of chemotherapy and hormonal therapy combinations.
   - —evaluation of preoperative (neoadjuvant) chemotherapy.
4. To gather further data concerning tamoxifen, including:
   - —safety of prolonged use in premenopausal patients.
   - —optimal duration of therapy.
   - —efficacy in patients with steroid-receptor-negative tumors.
   - —comparison and combination with gonadotropin-releasing hormone agonists.
5. To assess quality-of-life parameters in future clinical trials.
6. To determine the optimal margin for local primary excision in the presence and absence of extensive intraductal cancer.
7. To determine whether boost irradiation is required in patients with pathologically negative margins and whether boost irradiation produces a high probability of local control in patients with microscopic involvement of margins.
8. To determine the optimal sequence and timing for radiation therapy and systemic adjuvant therapy.

Conclusions and Recommendations

1. Breast conservation treatment is an appropriate method of primary therapy for the majority of women with Stage I and II breast cancer and is preferable because it provides survival equivalent to total mastectomy and axillary dissection while preserving the breast.
2. The recommended technique for breast conservation treatment includes:
   - — local excision of primary tumor with clear margins.
   - — Level I-II axillary node dissection.
   - — breast irradiation to 4,500-5,000 cGy with or without a boost.
3. The many unanswered questions in the adjuvant systemic treatment of node negative breast cancer make it imperative that all patients who are candidates for clinical trials be offered the opportunity to participate.
4. The majority of patients with node negative breast cancer are cured by breast conservation treatment or total mastectomy and axillary dissection.
5. The rate of local and distant recurrence following local therapy for node negative breast cancer is decreased by both adjuvant combination cytotoxic chemotherapy and by adjuvant tamoxifen. The decision to use adjuvant treatment should follow a thorough discussion with the patient regarding the

likely risk of recurrence without adjuvant therapy, the expected reduction in risk with adjuvant therapy, toxicities of therapy, and its impact on quality of life.

6. While all node negative patients have some risk for recurrence, patients with tumors less than or equal to 1 centimeter have an excellent prognosis and do not require adjuvant systemic therapy outside of clinical trials.

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Speakers were:

Professor Michael Baum, "Adjuvant Tamoxifen: Results From the NATO and CRC Trials"

Professor Mogens Blichert-Toft, "A Danish Randomized Trial Comparing Breast Conservation With Mastectomy in Mammary Carcinoma"

Gianni Bonadonna, M.D., "Milan Adjuvant Chemotherapy Trial for Node Negative Breast Cancer Patients"

Nancy Brinker, "Prospective of the Breast Cancer Patient: Implication for Biomedical Research"

F. Andrew Dorr, M.D., "Future Issures in Adjuvant Therapy for Patients With Node Negative Breast Cancer"

Lynn G. Dressler, M.A., "DNA Flow Cytometry Measurements Have Significant Prognostic Impact in the Node Negative Breast Cancer Patient: An Intergroup Study (INT 0076)

Bernard Fisher, M.D., "Breast Conservation Trials of the NSABP', "NASBP B-13: Methotrexate + 5-FU in Women With Estrogen Receptor Negative, Node Negative Breast Cancer," "NSABP B-14: Tamoxifen Versus Placebo in Women With Estrogen Receptor Positive, Node Negative Breast Cancer"

Edwin R. Fisher, M.D., "Prognostic Factors in NSABP Studies of Women With Node Negative Breast Cancer"

Barbara Fowble, M.D., "Radiotherapeutic Considerations in the Treatment of Primary Breast Cancer"

Richard D. Gelber, Ph.D., "Reporting and Interpreting Adjuvant Clinical Trials," "Quality of Life in Patients Receiving Adjuvant Therapies"

Kennedy Gilchrist, M.D., "Pathology Search for Prognostic Factors in the Intergroup 0011 Trial Population: An Outgoing Effort"

Eli Glatstein, M.D., "Results of the NCI Early Breast Cancer Trial"

Aron Goldhirsch, M.D., "International Breast Cancer Study Group Trial of Perioperative Chemotherapy"

Professor Adrian L. Harris, "Epidermal Growth Factor Receptor and Other Oncogenes"

Jay R. Harris, M.D., "Recurrence in the Breast Following Conservative Surgery and Radiotherapy"

Bruce E. Hillner, M.D., "A Decision Analytic Model of Adjuvant Therapy for Node Negative Breast Cancer Women"

Walter Felix Jungi, M.D., "Swiss Adjuvant Trials in Women With Node Negative Breast Cancer: 14-Year Results"

Marsha H. Lampert, P.T., "A Prospective Study Comparing Functional Outcome of the Upper Extremity in Women With Primary Breat Cancer Receiving Modified Radical Mastectomy or Excisional Biopsy and Radiation Therapy"

Richard G. Margolese, M.D., "Surgical Consideration in Selecting Among the Local Therapy Options"

William L. McGuire, M.D., "The Relative Value of Tumor Size, Hormone Receptors, Flow Cytometry, HER-2/Neu Oncogene, Cathepsin D, and Stress Response Proteins in Predicting Patient Outcome in Axillary Node Negative Breast Cancer"

Professor J. Michael Morrison, "The West Midlands Oncology Association Trial of Adjuvant Chemotherpay for Patients With Node Negative Breast Cancer"

Henning T. Mouridsen, M.D., Ph.D., "Classical Prognostic Factors in Node Negative Patients (The DBCG Experience)"

Gerald Ribeiro, M.D., F.R.C.R., "Christie Hospital Adjuvant Trial"

Paul Peter Rosen, M.D., "Survival and Prognostic Factors in Node Negative Breast Cancer: Results of Long-Term Follow-up Studies"

Wendy S. Schain, Ed.D., "Psychosocial Factors Affecting Treatment Recommendations for Primary Breast Cancer"

Helen J. Stewart, M.D., "The Scottish Adjuvant Tamoxifen Trials"

Ian F. Tannock, M.D., Ph.D., "Use of a Physician-Directed Questionnaire To Define a Consensus About Management of Breast Cancer: Implication for Assessing the Costs and Benefits of Treatment"

Douglass C. Tormey, M.D., Ph.D., "INT-0011: CMFP Versus Observation in High-Risk Node Negative Breast Cancer Patients"

Johannes Adriaan van Dongen, M.D., Ph.D., "Randomized Clinical Trial To Assess the Value of Breast Conserving Therapy in Stage I and Stage II Breast Cancer; EORTC Trial 10801"

Professor Umberto Veronesi, "Breast Conservation Trials of the NCI-Milan"

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50 Years Ago

From the *Journal of the Connecticut State Medical Society*

February 1941

AMERICA NEEDS A CREDO

Too long have we listened to the siren voice of License disguised as Liberty. Rebellion (against convention) now appears garbed in the classic robes of a recent Renaissance. Our bodies have grown puny and our wits are soft for lack of exercise. Our aesthetic astigmatism is not only condoned but approved by many of our intellectuals. Perhaps they have forgotten that its parents were Mars and Venus or perhaps they don't care. As a nation, our devotion to Bacchus is truly touching — it pays our taxes and fills our jails.

America needs a Credo! What for? Because only by the adoption of a Credo-only by the statement of its creed-only by so crystalizing its deepest convictions and its highest purposes can our nation hope to fuse its massive energies into a gigantic effort for the struggle which even now engages us.

Most of us take America for granted — its freedom of speech and press and religion. We see nothing extraordinary in the liberties of every-day life which we enjoy. We are amazed that any one should wish to curtail them or that millions should more or less willingly sacrifice their own privileges in order-eventually-to enslave us. We like best the government which governs least. We are spoiled children.

We have power! Hidden in our hills are the raw materials which, fashioned in our factories with speed and precision into instruments of defense may well discourage the limitless ambitions of the modern Alexanders. We have power! Hidden in the clever minds of trained technicians are the blue-prints of mass production which, converted to reality will amaze an apparently shock-proof world.

We have power! But it is unharnessed. It dreams itself to oblivion in the complex seduction of the Jazz Age. It wastes its precious potentialities in futile arguments over the latest football victory. It writes its own Declaration of Independence — not against foreign tyranny but against any attempt to unify its effort (this is called "regimentation") or any plan to deprive it of its toys (here it appeals to the Bill of Rights).

All power comes from within. Mines and factories are inert units until vitalized by the imagination of some human genius. But as Purpose must precede every constructive effort so must Faith embodied in a Credo inspire us to zeal and sacrifice in the task that lies ahead.

In the very nature of things a Credo must be exclusive — one cannot believe everything. This is not the time for broad tolerance and gentle indulgence of the crack-pots, fellow-travelers and the whole tribe of shiftless members of the lunatic fringe. When America has been salvaged we may find time for their comedy—now there is work for warriors to do.

We shall not all go to camp but we all will need to fight — to battle with cynicism and complacency, smugness and stupidity, dissension and defeatism. Some of these enemies are in ourselves, some in others. We must sacrifice pet convictions in the interest of unity and swallow hard truths for the sake of success.

Finally, each one of us must be filled with a deep sense of personal responsibility — a realization that our country is not merely a geographic entity but a dynamic, moving, growing force in the life of the world and that, in a very real sense — "I am an American" means "I am America."

D.P.G.

—Editorial from *The Connecticut State Medical Journal*, February, 1941.

Prevention and Treatment of Nerve Gas Poisoning

THE MEDICAL LETTER

WITH the possibility that chemical weapons may be used against United States armed forces in the Persian Gulf, the military has taken steps to protect our troops against poison gas, particularly "nerve agents" (MA Dunn and FR Sidell, JAMA,1989; 262:649).

NERVE "GAS" — At ambient temperatures, nerve agents considered likely to be used in chemical warfare — GA (tabun), GB (sarin), GD (soman), and VX — are liquids, not gases. GA, GB, and GD are volatile, but less so than water; at higher temperatures or when aerosolized by an explosion, they may be inhaled. VX is oily and less volatile. All of these agents can be absorbed through the skin.

MECHANISM OF ACTION — GA, GB, GD, and VX are organophosphates. Many insecticides are also organophosphates, but nerve agents are much more potent (DJ Rickett et al, Milit Med, 1987; 152:35). They act primarily by inhibiting acetylcholinesterase (AChE) at cholinergic receptor sites. As a result, the neurotransmitter acetylcholine (ACh) accumulates, causing hyperactivity at both muscarinic (most glands, involuntary or smooth muscle) and nicotinic receptors (skeletal muscle, preganglionic fibers).

CLINICAL EFFECTS — Exposure to either a liquid or vaporized nerve agent can cause copious secretions from the nose, eyes, mouth, lungs, and intestines, in addition to muscle fasciculations and twitching. Miosis is prominent after vapor exposure, but may not occur with liquid.

Liquid - The initial effect of a small droplet on the skin may be unnoticed local sweating and fasciculations. The first systemic effects — nausea, vomiting, and diarrhea, followed by a feeling of uneasiness and sometimes muscle twitching — may not begin until as long as 18 hours after exposure. A larger exposure to liquid GA, GB, or GD, or even a small amount of VX, after a delay of one to 30 minutes, may cause sudden unconsciousness, convulsions and, within minutes, flaccid paralysis and apnea.

Vapor - Exposure to a small amount of vapor causes miosis, rhinorrhea, ocular pain, conjunctivitis, and dim or blurred vision within seconds. Bronchoconstriction and increased bronchial secretions cause symptoms varying from mild discomfort to severe dyspnea. With a larger exposure, one or two breaths may lead to loss of consciousness within seconds, followed by convulsions and, within minutes, flaccid paralysis and apnea.

TREATMENT — Health workers should wear protective gear and be sure that the patient's skin is thoroughly decontaminated with hypochlorite (household bleach diluted 1:10) or soap and water, and plain water for the eyes. Military personnel carry moist "towelettes" impregnated with chloramine, hydroxide, and phenol.

Atropine - Atropine blocks the action of excess acetylcholine primarily at muscarinic sites, decreasing secretions, bronchoconstriction, and intestinal motility. The initial dose of the drug is 2 mg for mild dyspnea to 6 mg or more for severe dyspnea, hypoxia, or multisystem signs; it can be given intramuscularly (IM) or intravenously (IV). US military personnel in Saudi Arabia carry three automatic injectors, each containing 2 mg of atropine. Miosis is not affected by these doses, and skeletal muscle effects (nicotinic sites) alone are not an indication for higher doses. The drug can be given as often as every five minutes until secretions are minimal and ventilation is adequate; some patients require 15 to 20 mg in the first three hours after exposure. Atropine inhibits sweating, which could lead to hyperthermia in a hot environment such as Saudi Arabia.

Pralidoxime Chloride - Oximes like pralidoxime *(Protopam Chloride)* attach to and release the inhibiting agent from AChE. They act primarily at nicotinic sites to normalize skeletal muscle activity. Pralidoxime itself has little activity at muscarinic sites, but greatly enhances the

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effect of atropine. Most nerve agents can be effectively treated with pralidoxime for hours after exposure, but GD becomes refractory to the drug within a few minutes. The initial dose of pralidoxime is 1 gram, given IV over 20 to 30 minutes; this dose may be repeated at hourly intervals for one or two additional doses. Pralidoxime is also packaged in an automatic injector (600 mg/2 ml) for IM administration; US soldiers carry three of these for concurrent use with the three atropine injectors.

Pretreatment with pyridostigmine - The US military has also issued pyridostigmine bromide *(Mestinon)* tablets, used in treating myasthenia gravis, for pretreatment when a nerve agent attack is considered imminent. Pyridostigmine is a cholinesterase inhibitor with a relatively short half-life that occupies the active site of AChE and blocks the action of the nerve agent. In recommended dosage, pyridostigmine is non-toxic and greatly enhances the effectiveness of atropine and pralidoxime against GD exposure, but it is not effective if the other antidotes are not given.

Anticonvulsants - Experimental animals given pretreatment and the antidotes have survived large amounts of nerve agent without apnea, but with prolonged convulsive activity (CG McLeod, Jr, Fundam Appl Toxicol, 1985; 5:S10). Therefore, US soldiers will soon also carry an automatic injector containing 10 mg of diazepam *(Valium;* and others), to be given with the third dose of atropine.

GAS MASKS — How well gas masks work depends on their design, manufacture, storage, and fit, as well as the nerve agent used, the speed of the wind, and the individual's distance from the source of exposure. Masks that only fit over the nose and mouth are unlikely to be effective against nerve gas because the vapor can be absorbed through the conjunctiva. US government standard masks that cover the entire face have the adsorptive capacity to protect against many times the LCt50 (concentration and time of exposure that would be lethal for 50% of the population) of nerve gas, but some other masks may be less efficient. Any mask can lose protective capacity if it is crushed or stored in high humidity. The tightness of the masks' seal around the face is usually more of a limiting factor than the adsorptive capacity of the filter: beards and eyeglasses, among other variables, may interfere (GO Rogers et al, *Evaluating Protective Actions for Chemical Agent Emergencies,* Oak Ridge: Oak Ridge National Laboratory, 1990, p 143).

PROTECTIVE CLOTHING — Liquid nerve agents penetrate ordinary clothing. Charcoal-lined Military Oriented Protective Posture (MOPP) suits, worn with a mask under a hood offer a high degree of protection, but may severely limit movement, visual acuity and, in a desert climate, could cause heat stroke (JL Kobrick et al, Aviat Space Environ Med, July 1990: 61:622).

CONCLUSION — Nerve agents block acetylcholinesterase and cause both muscarinic and nicotinic overactivity. Moderate exposure causes copious secretions from the eyes, nose, mouth, bronchi, and intestines. A major exposure can cause loss of consciousness, convulsions, and apnea. Protective clothing, gas masks, pretreatment with pyridostigmine, and treatment with atropine, pralidoxime, and diazepam may be life-saving.

Insurance Department Orders Insuror to Cease Business in State

The "Physicians National Risk Retention Group" has been ordered to "cease and desist" from writing new or renewal malpractice insurance business in Connecticut, according to a 1-14-91 letter from the State Insurance Commissioner to the president of CSMS.

The Department took action based upon its review of the Group's previous quarterly financial statement and a number of "problem areas" including underwriting losses, net loss, reinsurance, and the discounting of loss reserves.

In June of 1989, the Society's *CSMS Newsletter* promulgated a warning from the Insurance Commissioner to physicians against purchasing professional liability insurance from groups not licensed with the Connecticut State Insurance Department.

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The Worldwide Smoking Epidemic

Tobacco Trade, Use, and Control

AMA COUNCIL ON SCIENTIFIC AFFAIRS

DURING the past two decades, use of tobacco has increased worldwide by almost 75%.[1] In 1986, an estimated 1 billion persons consumed more than 5 trillion cigarettes.[2] Globally, increasing tobacco use is responsible for almost 2.5 million excessive or premature deaths per year—almost 5% of all deaths.[1] International tobacco trade and antitobacco activities are of growing significance for the worldwide smoking epidemic. Activities to restrict the use of tobacco in the United States and Canada, as well as in countries in both Oceania and Western Europe, have produced a declining demand for tobacco and tobacco products in these areas of the world.[3] To maintain and expand markets for their ongoing growth of tobacco leaf and manufactured tobacco products, multinational tobacco conglomerates in the United States, Great Britain, and West Germany, however, have responded by increasingly seeking favorable markets in countries where demand remains or has the potential for becoming high.

The US government, concerned about the contribution of trade deficits to the growing national debt, has cooperated with the US Cigarette Export Association, representing Philip Morris, R. J. Reynolds, and Brown and Williams, a subsidiary of British America Tobacco, to utilize the 1984 amendments of section 301 of the 1974 Trade Act to threaten trade sanctions against countries in Asia where trade agreements, quotas, high tariffs, high retail taxes, and advertising and distribution restrictions have been alleged by the US Cigarette Export Association to limit unfairly the markets to US tobacco products.[4] Increasingly affluent Asian countries with markets recently opened to US cigarette exports include Japan, Taiwan, and South Korea. Growth in cigarette trading in these markets is reflected in the 75% increase in US cigarette exports to Asia during 1988.[5]

Herein, trends in tobacco trading, including amounts and countries of destination, are described. In addition, smoking prevalence rates, worldwide tobacco control activities, and secular trends in lung cancer mortality rates for selected countries are presented. The report concludes with a number of recommendations to restrict the influence of US tobacco trade policies on the world health problems associated with the growing worldwide smoking epidemic.

Tobacco Trade

International tobacco trade, including US tobacco exports, contributes to the worldwide smoking epidemic through its influence on a large number of factors that in turn alter worldwide demand for tobacco products (Fig 1). United States pressures to open new foreign markets for its tobacco products frequently lead to a number of changes in importing countries: altered trade agreements, increases in tobacco import quotas, lower tariffs on imported tobacco products, and reduced retail taxes on cigarettes. All of these changes potentially lower prices of tobacco products and, where demand (including available disposable income) exists, lead to expansion of distribution sites, consumer changes to American

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From the Council on Scientific Affairs, American Medical Association, Chicago, IL.

This report was presented to the American Medical Association House of Delegates in June 1989 as Report B of the Council on Scientific Affairs. Action of the American Medical Association House of Delegates June 1989, Adopted.

This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined based on all of the facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the views of scientific literature as of June 1989.

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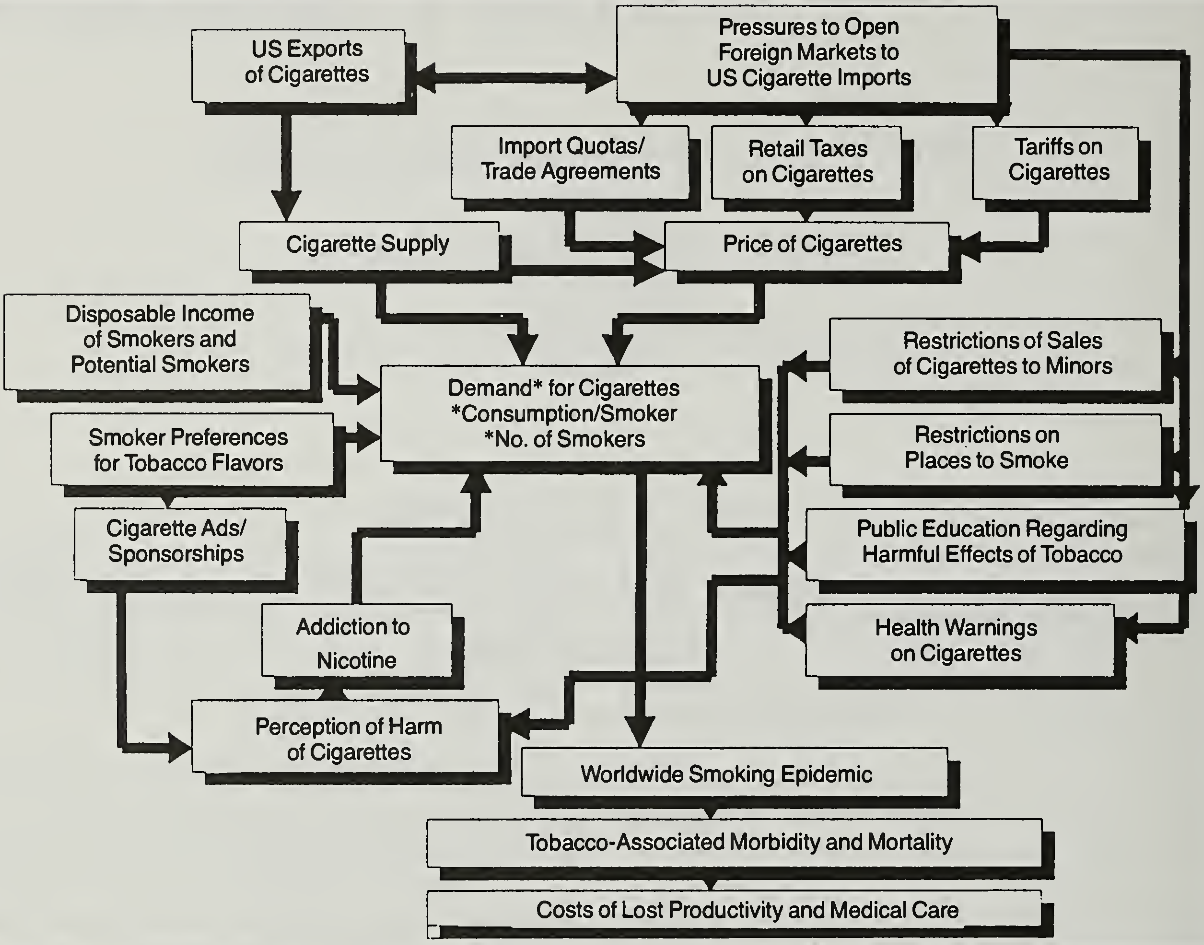
US Exports of Cigarettes
Pressures to Open Foreign Markets to US Cigarette Imports
Import Quotas/ Trade Agreements
Retail Taxes on Cigarettes
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Addiction to Nicotine
Health Warnings on Cigarettes
Perception of Harm of Cigarettes
Worldwide Smoking Epidemic
Tobacco-Associated Morbidity and Mortality
Costs of Lost Productivity and Medical Care

Fig 1.—Factors that contribute to worldwide demand for cigarettes.

blended cigarettes, and increasing sales and consumption of tobacco products.

In addition, existing or proposed antismoking efforts can be impeded in countries where pressures are applied to open new markets to US tobacco. These efforts include restrictions on sales of cigarettes to minors, restriction on advertising and promotion, restrictions on places to smoke, public education regarding the harmful effects of tobacco, and health warnings on cigarettes (Fig1).

Multinational tobacco conglomerates view such activities as unduly restrictive to the distribution of their products. In several countries, including those with centrally controlled economies, cigarette manufacturing businesses are owned by the government, which also is responsible for developing and implementing legislative actions to control smoking. With increased imports and greater competition with domestic cigarettes, there is little impetus to develop or promote antitobacco efforts in these countries. The failure of the US government to require health warnings on cigarette exports removes any competitive incentive for requiring such warnings on domestic cigarettes in countries that import cigarettes manufactured in the United States.

Growing US cigarette exports increase the supply of cigarettes, including the proliferation of new brands, in turn leading to lower cigarette prices (Fig 1). In countries where low per capita consumption of cigarettes is due to lack of disposable income, lower cigarette prices can lead to an increase in tobacco consumption. In addition, the flavor of blended tobaccos used in cigarettes manufactured in the United States frequently is preferred to domestically grown darker or unblended tobaccos (Fig 1), and, in some countries, US cigarettes are considered status symbols. These factors lead to increased competition with domestic cigarettes and more aggressive advertising by US and domestic tobacco manufacturers. Advertising has been reported to target groups with low tobacco consumption and a potential for an expanding market, such as women and adolescents.

It is important to consider the influence of US government pressures to open new foreign markets independent of US tobacco exports themselves. Multinational tobacco conglomerates in the United States that use the US government to open these new markets also support tobacco growth and control the manufacture of cigarettes in developing and recently developed countries. Once US gov-

Table 1.—World Tobacco Leaf Production, 1987 to 1988*

Country	Tobacco Leaf, Metric Tons 1987	Tobacco Leaf, Metric Tons 1988†	% of World Production, 1988
China	1 945 000	2 309 000	36
United States	542 544	604 422	9
Brazil	410 000	402 000	6
India	460 260	322 860	5
Soviet Union	296 000	296 000	5
Turkey	177 188	169 793	3
Indonesia	154 020	163 211	2
Italy	154 500	152 000	2
Greece	144 045	139 300	2
Bulgaria	112 250	134 000	2
Burma	115 080	115 080	2
Zimbabwe	131 483	112 000	2
Japan	104 400	103 429	2
Other	1 434 779	1 464 304	22
Total	**6 181 549**	**6 487 399**	**100**

*Data from US Dept of Agriculture.[10]
†Projected.

ernment trade pressures successfully open new markets, the multinational tobacco conglomerates are free to trade to-bacco not only from the United States, but also from other countries in which they have strong tobacco holdings.

International trade in tobacco products is dominated by six multinational tobacco conglomerates, four in the United States and two in Great Britain.[6] In the late 1970s, multinational tobacco conglomerates manufactured 39% of cig-arettes; government agencies, 33%; tobacco monopolies in capitalistic countries, 17%; and other tobacco firms, 11%.[6] However, these figures do not consider joint ventures, product licensing agreements, and other subsidiary arrangements of multinational tobacco conglomerates and may underestimate cigarette manufacturing activities by multinational tobacco conglomerates.

Worldwide Tobacco Leaf Production

The tobacco industry, ignoring long-term costs of medical care, loss of productivity from tobacco-attributable morbidity and mortality, loss of land use for growth of other crops, and problems of deforestation, including global warming,[7] continues to promote tobacco as an excellent cash crop. Tobacco leaf is grown in at least 120 countries; the major tobacco-growing countries are listed in Table 1. Sixty-three percent of the world's tobacco is produced in developing or recently developed countries.[6] World tobacco leaf production during 1987 was 6.2 million metric tons and is expected to increase by 5% to 6.5 million metric tons in 1988.[5] The major contributor to the expected worldwide increase in leaf production in 1988 is the projected 19% gain in China in 1988.[5]

Since the time of the first commercial cultivation of tobacco in Virginia in the early 1600s, tobacco leaf has been one of the most valuable US exports.[8] Tobaccos are categorized according to type of tobacco (eg, burley and darker tobaccos) and type of curing (eg, air-curing and flue-curing, including fire-curing). Before World War II, primarily dark fire-cured and dark air-cured tobaccos were produced. However, domestic and world demand for lighter, flue-cured types of tobacco has increased,[8] and flue-cured light tobaccos and air-cured burley tobaccos constitute 90% of all tobacco grown in the United States.

Production of flue-cured tobacco declined between 1978 and 1986, with a subsequent increase noted in 1987, and a projected gain for 1988.[5] Burley yields during the same period have been more variable, with increases noted for 1987 and forecast again for 1988.[5] The United

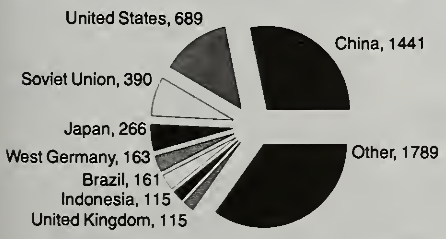

Fig 2.—Worldwide cigarette production, by country, in 1987 (in billions of cigarettes).[11]

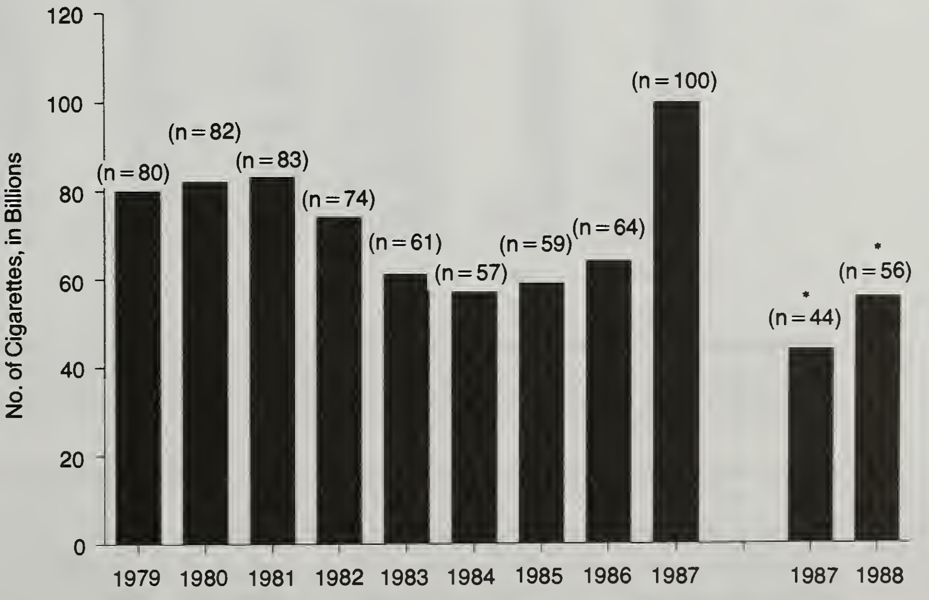

Fig 3.—United States cigarette exports, 1979 to 1987.[7] Asterisk indicates data from January to June of that year.

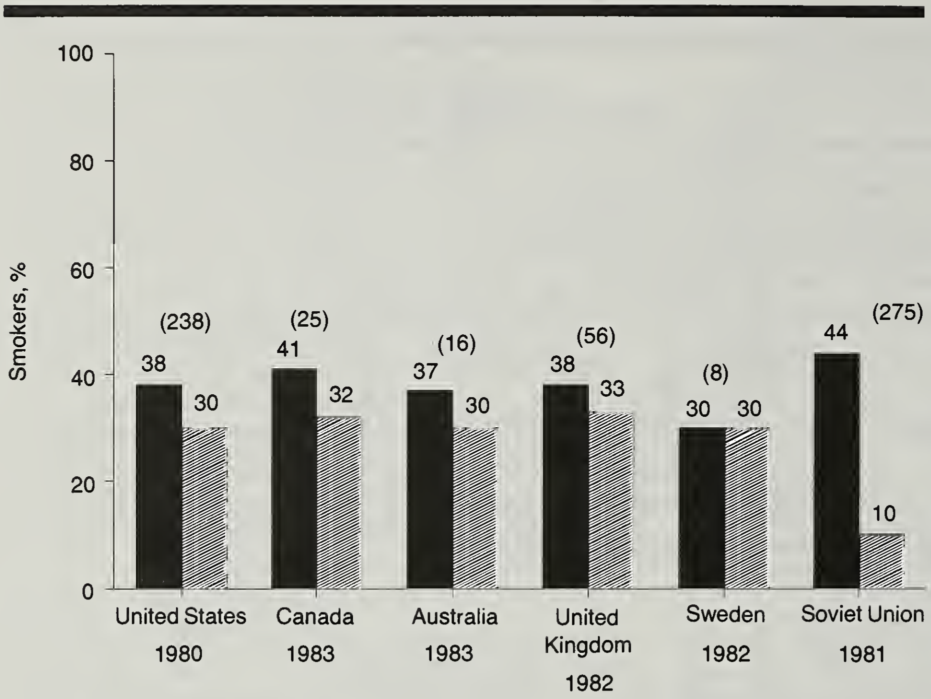

Fig 4.—Percentages of smokers in selected countries in selected years.[8] Numbers over bars are the percentages of male (solid bars) and female (slashed bars) smokers; numbers in parentheses, populations in millions.

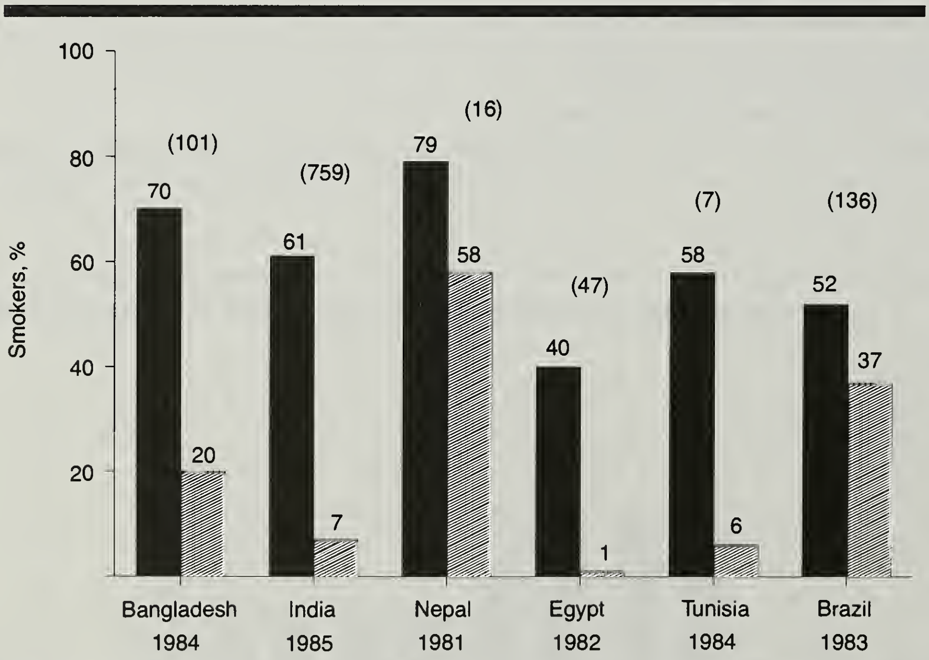

Fig 5.—Percentages of smokers in selected countries in selected years.[8] Numbers over bars are the percentages of male (solid bars) and female (slashed bars) smokers; numbers in parentheses, populations in millions.

States has been a leading producer of flue-cured, light tobaccos that have been in demand in international markets. Consequently, half the flue-cured tobacco grown in the United States is exported[5] and the major portion of burley tobacco is produced for domestic use.[5]

Worldwide Tobacco Leaf Trade

In 1987, 21% of all tobacco leaf produced in the world was exported.[9] In 1986, the United States was the leading exporter of leaf tobacco (in metric tons) (216 583), followed by Brazil (176 000), Greece (100 864), Italy (91 355), Zimbabwe (90 023), Turkey (81 952), India (61 762), Bulgaria (61 570), and Malawi (57 563). The major importers of tobacco leaf (in metric tons) during the same year were the United States (209 969), Germany (167 899), the United Kingdom (101 214), the Soviet Union (100 000), the Netherlands (79 587), Japan (66 300), and Spain (60 317).[9] In 1986, the unit value (US dollars per kilogram) of both exported and imported tobacco leaf differed markedly among countries: US exports, $5.65, and imports, $2.88; Brazil exports, $2.28; Greece exports, $3.06; Italy exports, $1.27; Turkey exports, $3.30; India exports, $1.71; Japan exports, $5.87; Germany imports, $4.65; United Kingdom imports, $3.49; the Netherlands imports, $4.65; and Spain imports, $4.24. In 1987, the United States exported 195 026 metric tons of tobacco leaf, or approximately 36% of the tobacco produced in this country, and imported 221 202 metric tons of tobacco leaf.[10] In the United States, the value of exported tobacco was approximately two times that of imported tobacco.[10]

Between, October 1987 and May 1988, US tobacco leaf exports were traded to countries in Western Europe (50%), Asia (40%), Africa (7%), Oceania (2%), and Latin America (1%).[5] In 1987, large proportions of US tobacco leaf exports were traded to West Germany, the Netherlands, Spain, Italy, Switzerland, and Japan.[5]

Worldwide Cigarette Production

Cigarettes are manufactured worldwide. In 1987, annual US production of 689 billion cigarettes was second only to that of 1441 billion cigarettes produced in China

(Fig 2). Worldwide production of cigarettes has been increasing since at least 1970, with a 2.9% increase from 4.97 trillion cigarettes in 1986 to 5.12 trillion in 1987.[11] The 10% increase in production in China from 1986 to 1987 was the major contributor to the worldwide increase in production.[11]

Although US production increased by 6% between 1986 and 1987, production gains in China were much greater. Other countries that reported increases of 3 billion or more cigarettes between 1986 and 1987 were the Soviet Union, Poland, Spain, the Philippines, Mexico, Hong Kong, Bulgaria, and South Korea.[11] While increased production in the United States, Hong Kong, and Bulgaria was in response to increasing exports, that in the other countries was in response to increased domestic consumption.[11]

Total cigarette production in the United States declined from 694 billion cigarettes in 1982 to 650 billion in 1986, followed by an increase in 1987 to 689 billion.[5] An additional increase is projected in 1988 to 705 billion cigarettes.[5] The decrease in production between 1982 and 1986 was the result of a reduction in consumption of cigarettes in the United States,[5] due largely to growing antismoking efforts. The increase in production between 1986 and 1988 is largely in response to increasing US cigarette exports (Fig 3).

Worldwide Cigarette Trade

Internationally, cigarette exports declined between 1982 and 1983, followed by steady gains between 1984 and 1987.[11] A similar trend was observed in US exports (Fig 3). The decline for US exports in the early 1980s may in part be attributed to the increasing strength of the US dollar in foreign markets, as well as to declining demand for cigarettes in markets in Western Europe and other industrialized countries. In 1987 the five leading countries to which the United States exported the largest proportions of cigarettes were Japan (32%), Belgium-Luxemburg (23%), Hong Kong (12%), Saudi Arabia (6%), and Singapore (3%).[11]

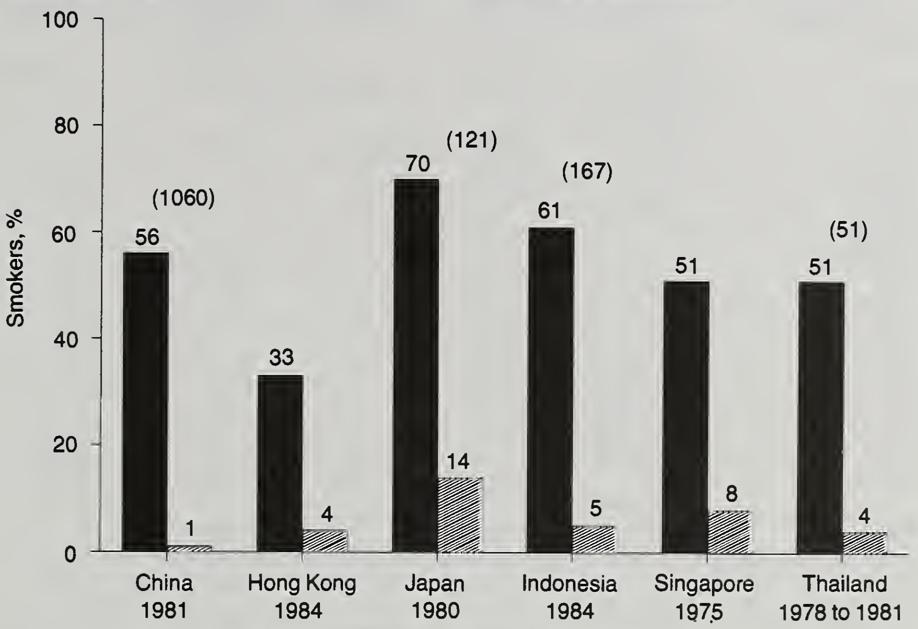

Fig 6.—Percentages of smokers in selected areas of the world in selected years.[8] Numbers over bars are the percentages of male (solid bars) and female (slashed bars) smokers; numbers in parentheses, populations in millions.

Table 2.—Worldwide Antitobacco Activities*

Country	Advertising Restrictions†	Health Warnings‡	Package Information§	Smoking in Public Places¶	Smoking in Workplaces#
Argentina	Strong partial ban	Required	...	....	...
Brazil	...	Required	...	Moderate	...
Bolivia	Strong partial ban	Required	...	Moderate	...
Canada	Total ban (pending)	Voluntary	NIC/TAR‖	Moderate	...
Chile	Moderate ban	...	...	...	...
Costa Rica	...	Required	...	...	...
Colombia	Moderate ban	Required	...	...	...
Ecuador	Moderate ban	Required	...	...	...
Guatemala	...	Required	...	...	...
Mexico	Moderate ban	Required	...	...	...
Panama	Moderate ban	Required	...	...	...
Paraguay	Moderate ban	...	...	...	...
Peru	Moderate ban	Required	...	...	...
United States	Moderate ban	Rotating	...	Moderate	Legislation
Uruguay	Moderate ban	Required	...	Moderate	...
Venezuela	Moderate ban	Required	...	Moderate	...
Algeria	Total ban	Required	...	Moderate	...
Gambia	Strong partial ban	...	...	...	...
Ivory Coast	...	...	...	Moderate	...
Kenya	...	Required	...	Moderate	...
Mozambique	Total ban	...	...	Moderate	...
Nigeria	...	...	...	Moderate	...
Senegal	Strong partial ban	Required	NIC/TAR	Moderate	...

Table 2.—Worldwide Antitobacco Activities* (cont)

Country	Advertising Restrictions†	Health Warnings‡	Package Information§	Smoking in Public Places¶	Smoking in Workplaces#
Cyprus	Strong partial ban	Required	...	Moderate	...
Egypt	Strong partial ban	Required	NIC/TAR	Moderate	...
Jordan	Total ban	Required	NIC/TAR	Stringent	...
Kuwait	...	Required	NIC/TAR	...	...
Lebanon	Moderate ban	Required	...	Moderate	...
Pakistan	...	Required	...	...	...
Saudi Arabia	...	...	...	Moderate	...
Sudan	Total ban	Required	...	Moderate	...
Hong Kong	Moderate ban	Required	NIC/TAR	Moderate	...
India	...	Required	...	...	...
Macao	Moderate ban	Required	...	Moderate	...
Sri Lanka	Moderate ban	Required	...	Moderate	...
Thailand	Moderate ban	Required	...	Moderate	...
Austria	Moderate ban	...	NIC/TAR	Moderate	Legislation
Belgium	Strong partial ban	Required	NIC/TAR/CO	Stringent	Legislation
Bulgaria	Total ban	Required	...	Stringent	...
Czechoslovakia	Total ban	Required	...	Moderate	...
Denmark	Strong partial ban	Required	NIC/TAR‖	Moderate	...
Finland	Total ban	Rotating	NIC/TAR/CO	Stringent	...
France	Strong partial ban	Required	NIC/TAR	Stringent	Legislation
German Democratic Republic	Total ban	...	...	Moderate	...
German Federal Republic	Strong partial ban	Voluntary	NIC/TAR	...	Legislation
Greece	...	...	...	Moderate	...
Hungary	Total ban	Required	...	Stringent	...
Iceland	Total ban	Required	...	Moderate	Legislation
Ireland	Strong partial ban	Voluntary/ rotating	...	...	...
Israel	...	...	...	Moderate	...
Italy	Total ban	...	...	Stringent	...
Malta	Moderate ban	...	...	...	...
the Netherlands	Moderate ban	Required	NIC/TAR	...	Legislation
Norway	Total ban	Rotating	NIC/TAR	...	...
Poland	Total ban	...	...	Stringent	Legislation
Portugal	Total ban	Required	NIC/TAR	Stringent	...
Romania	Total ban	...	...	Stringent	...
Spain	Total ban[1]	Required	NIC/TAR	Moderate	Legislation
Sweden	Strong partial ban	Rotating	NIC/TAR/CO	Moderate	Legislation
Switzerland	Moderate ban	Required	NIC/TAR	...	...
Turkey	...	...	...	Moderate	...
Soviet Union	Total ban	Required	...	Stringent	Legislation
United Kingdom	Strong partial ban	Voluntary/ rotating	TAR‖	...	...
Yugoslavia	Total ban	...	...	Moderate	...
Australia	Strong partial ban	Required	...	...	...
French Polynesia	Total ban	Required	...	...	...
Japan	...	...	...	Moderate	...
Malaysia	Moderate ban	Required	...	Moderate	...
New Zealand	Strong partial ban	Voluntary	...	Moderate	...
Singapore	Total ban	Required	...	Moderate	...

*Data from Roemer.[16,17]

†Total ban indicates ban on advertising of tobacco products in all media; strong partial ban, restrictions in several media; and moderate ban, only minor restrictions in several media, or major restrictions in several media.

‡Required indicates required by legislation; voluntary, required by voluntary agreement with industry; and rotating, rotating warnings required by legislation.

§NIC indicates nicotine level required by legislation; TAR, tar level required by legislation; and CO, carbon monoxide level required by legislation.

‖Required by voluntary agreement with industry.

¶Stringent indicates restrictions to widely control smoking in public places for health reasons; and moderate, limited restrictions to control smoking in public places.

#Legislation indicates legislation exists to control smoking in workplaces.

The proportion of cigarettes exported to Japan increased from 16% in 1986 to 32% in 1987.[11] Production of cigarettes in Japan declined steadily between 1983 and 1987, while imports, including those from the United States, increased between 1985 and 1987.[11] In 1987, 30.5 billion cigarettes were imported, a 158% increase over imports in 1986, and 94% of the imported cigarettes were from the United States in 1987.[11] Imports in 1987 represented 10% of the domestic cigarette market and are projected to increase to comprise 15% to 20% of the domestic market by 1992.[11] These increases reflect the market responses to the investigation of possible unfair trade conditions conducted by the US government under section 301 of the 1974 US Trade Act. As a result of US government threats of trade sanctions, reflected in a July 1986 letter from a US senator to Yashiro Nakasone, prime minister of Japan (Sen Jesse Helms [R], written communication, July 24, 1986), Japan lowered import tariffs and liberalized pricing, advertising, and distribution restrictions on imported cigarettes.[4]

These changes allowed US man-ufacturers to reduce the prices of cigarettes sold in Japan by 11% to 21% to a price range of 220 to 240 yen (US dollars, $1.65 to $1.80).[11] To remain competitive with imported cigarettes, in 1987 Japan Tobacco Incorporated, now a private corporation, introduced seven new brands of cigarettes in response to growing consumer de-mand for milder tobacco blends. In addition to growing competition from imported cigarettes, overall demand, as reflected in consumption of cigarettes, declined in Japan from 84% of men in 1966 to 63% in 1986, and from 18% of women in 1966 to 13% in 1986.[12]

In contrast, in Hong Kong, where cigarette imports increased from 9.6 billion in 1986 to 13.7 billion in 1987, production also increased from 13.7 billion cigarettes in 1986 to 17.5 billion in 1987.[11] Following the enactment of the Smoking Ordinance in Hong Kong in 1982, [13] the prevalence of smoking declined to 30.6% in men and 3.8% in women. The observed increase in domestic production in conjunction with increasing imports seems to be in response to growing exports of cigarettes from Hong Kong, primarily to China.[11] Exports to China increased from 5199 million (66% of total exports) in 1983 to 19 146 million (76% of total exports) in 1987.[11]

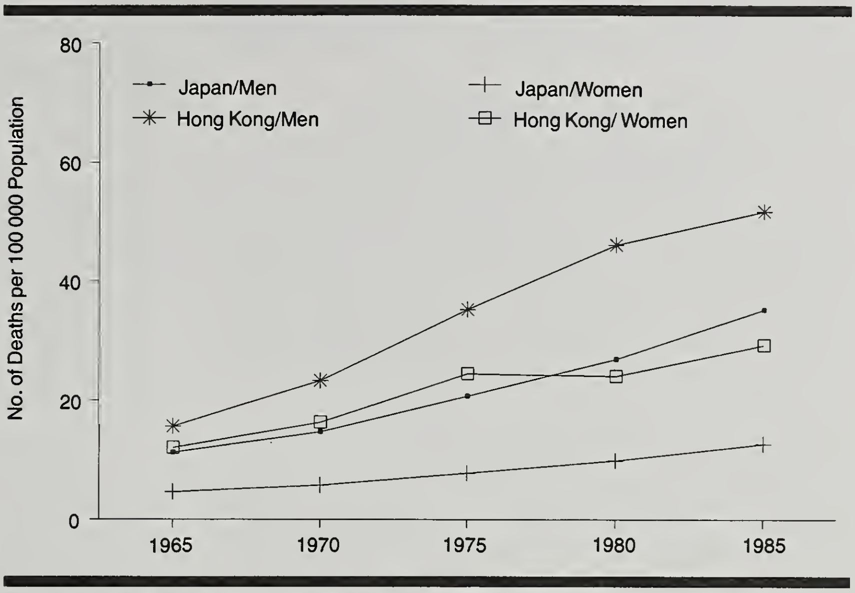

Fig 7.—Sex-specific lung cancer mortality rates in Japan and Hong Kong, 1965 through 1985. (From *World Health Annual Statistics*. Geneva, Switzerland: World Health Organization; 1973, 1978, 1982, 1986.)

Recent increases in cigarette imports from the United States by South Korea and Taiwan, both with state-owned tobacco monopolies, also can be attributed to the effects of trade settlements of US investigations under section 301 of the 1974 US Trade Act. Between 1986 and 1987, cigarette imports increased by 1115% in South Korea and by 1015% in Taiwan.[11] In 1987, 75% of the cigarettes imported by Taiwan were from the United States, and domestic production of cigarettes declined by 12%.[11] Cigarette production in South Korea, however, increased by 3.7% from 1986 to 1987, with exports of 11.7 million cigarettes to the United States and expectations of future increases in exports to 345 million cigarettes annually to the United States.[11] Between 1986 and 1987, domestic consumption of cigarettes increased by 4.4% in South Korea.[11]

Worldwide Trends in Smoking Prevalence

Although the prevalence of smoking is declining in economically developed countries, increasing numbers of people are smoking in developing countries, particularly in Southeast Asia, Latin America, and Africa.[3] Observations of secular changes in smoking patterns with economic development in countries such as the United States and Canada, as well as in countries in Oceania and Western Europe, indicate that smoking rates initially increase with advancing socioeconomic development and increasing levels of disposable income, but subsequently decline with improvements in education and increasing antismoking efforts. In countries where smoking is traditionally common among men prior to economic development, the initial change with advancing socioeconomic development and with growing competition in the cigarette market is greater demand for cigarettes, followed by initiation of smoking by additional numbers of women and adolescents. However, as educational levels and antismoking activities increase, per capita tobacco consumption and smoking rates decline, first in men and then in women.

These trends in smoking prevalence are evident in the data presented for selected countries in Figs 4 through 6. The quality of these data could be improved, and the World Health Organization recently developed guidelines to increase standardization of smoking survey data.[13]

With regard to tobacco use in children, it has been estimated that worldwide as many as 200 million children currently younger than 20 years will subsequently die from tobacco use.[14] In 14 economically developed countries with long-standing antismoking activities, and for which smoking prevalence time trend data are available (from 1971 to 1985), smoking rates declined in boys in all 14 countries.[15] In contrast, smoking rates in young girls declined in only 9 of the 14 countries (Belgium, Denmark, Federal Republic of Germany, the Netherlands, Finland, Norway, Sweden, the United Kingdom, and the United States) and increased in 5 countries (Australia, Canada, France, Democratic Republic of Germany, and New Zealand).[15]

In general, in developing countries, smoking is common among adolescent boys and, primarily because of cultural influences, is less common among adolescent girls.[15] However, in some countries in Southeast Asia and the Eastern Mediterranean, such as Nepal, Iran, Israel, Lebanon, and Tunisia, the prevalence of smoking is high in girls and boys.[15]

Worldwide Antismoking Activities

Efforts to control smoking include legislative and health education activities. Information on worldwide legislation to control smoking has been gathered through mid-1986.[16,17] This information, regarding advertising bans, health warnings, package information indicating levels of nicotine, tar, and carbon monoxide, and smoking in public places and workplaces, is summarized in Table 2.

Banning cigarette advertising is a significant and common type of antitobacco legislation. By mid-1986, fifty-five countries had enacted legislation to control advertising—20 with total bans, 15 with strong partial bans, and 20 (including the United States) with moderate bans. Countries in Europe (Table 2) reported the strongest bans on advertising. However, advertising bans are not enforced uniformly in all countries. Three leading tobacco-producing countries—Brazil, Greece, and Turkey—reported no advertising bans.

By mid-1986, fifty-two countries required health warning on cigarettes. Only 6 countries (Australia, Finland, Iceland, Ireland, Norway, the United Kingdom, and the United States), however, had recognized the effectiveness of and required rotating warnings, as used in the Swedish system.[18,19] Far fewer countries,[20] excluding the United States,[16] required statements on cigarette packages regarding nicotine, tar, and carbon monoxide levels. Forty-seven countries reported some legislation to control smoking in public places, and 11 countries had legislation that limited smoking in the workplace.

Secular Trends in Lung Cancer Mortality

While tobacco use increases risk for mortality from a number of diseases, the smoking-attributable risk[21] for lung cancer is highest. In populations, a 20-year lag occurs between the time of changes in smoking prevalence and observations of changes in lung cancer mortality rates. Other significant issues to be considered in interpreting secular trends in country-specific lung cancer mortality rates include changes in mortality rates from competing causes of death, other possible exposures manifested as population cohort effects, changes in age distributions of the populations over time, and changes in accuracy of diagnosis.

Worldwide, lung cancer is increasing rapidly. In 1975, 600 000 new cases of lung cancer were reported[22]; it is estimated that lung cancer deaths worldwide may increase to 2 million by the year 2000.[8] The most important contribution to age-specific increases in lung cancer rates is the increasing numbers of cigarette smokers.[23]

In Japan for the period 1950 to 1985 the lung cancer mortality rate increased from 2.7 deaths per 100 000 in 1950 to 20.2 deaths per 100 000 in 1979.[24] Sex-specific lung cancer mortality rates (per 100 000 population) increased from 11.2 in men and 4.6 in women in 1965 to 35.3 in men and 12.7 in women in 1985 (Fig 7). Further increases in lung cancer mortality can be expected given increasing per capita consumption of cigarettes from 1220 in 1950 to 3468 in 1979.[24] During this same period, similar increases were noted in men and women in Hong Kong (Fig 7). In areas of the world where tobacco use is increasing, comparable future increases in lung cancer mortality, as well as morbidity and mortality from other tobacco-associated diseases, can be expected.

Recommendations

The Council on Scientific Affairs recommends that the American Medical Association take the following actions:

1. Urge the US government to alter trade policies and practices that currently serve to promote the world smoking epidemic.
2. Continue the activities recommended in resolution 185, A-88 to
    - support federal legislation that requires health warning labels in the appropriate native language or symbolic form to be on packages of cigarettes exported and require foreign advertising by the US tobacco producers to be at least as restrictive as types of advertising permitted in the United States;
    - encourage labeling on tobacco products manufactured abroad to be at least as restrictive as those that are produced in the United States;
    - oppose efforts by the US government to persuade countries to relax regulations concerning tobacco promotion and consumption;
    - and urge the World Health Organization to increase its worldwide antismoking efforts.
3. Work with the World Medical Association as well as directly with national medical societies to expand activities by the medical profession to reduce tobacco use worldwide.
4. Establish close working relations with the World Health Organization to promote more physician involvement in antitobacco activities, particularly in developing and recently developed countries.
5. Work with the Centers for Disease Control's office on Smoking and Health to promote worldwide antitobacco activities.
6. Periodically monitor the success of worldwide antitobacco efforts to control the growing worldwide smoking epidemic.

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HELPFUL HINTS

Clogged Sinuses

E. TREMAIN BRADLEY, M.D.

THIS is the season, in New England anyway, and this winter over most of the country. Sniffles, colds, flu—nearly all involve chronic sinus congestion and discharge. Try to cure it—and keep it cured? Permanent frustration! If it's inevitable, learn to cope with it.

What about sinuses? These cavities in the skull, filled with air, make it much lighter. But in sinusitis the air is displaced by secretion, serous or muco-purulent, and poor drainage promotes congestion and infection. So we upright human beings suffer annoyance, discomfort, sometimes even pain.

Who said "a dog's life" is so bad! He doesn't have trouble with his sinuses. The back of his head is *up* and his face basically *down*, placing the small openings of the sinuses into the nasal cavity inferiorly. Thus any secretion can readily drain out and air can flow upward and fill the cavity. We proud bipeds hold our chins high and let the air out of our sinuses and keep the secretions in. Do any other creatures suffer from sinusitis?

Leaning one's head forward—over the desk, over a factory machine, over an operating table—will facilitate drainage. But at night, sleeping on one's back, it all piles up again. Well, turn the face down, not to smother, but propped up on a pillow and almost face down. The head of course is turned a little to one side. In this position the sinuses and nasal cavity on that side drain better. So after a while, turning the head slightly toward the other side helps that side to drain. This also helps reduce irritation, by the secretions, of the posterior nasopharnx and that cough-producing tickle. These secretions can be swallowed, expectorated, or blown from the nose when one is awake. At night unfortunately they tend to run down into the larynx and trachea, producing secondary problems. This can be largely prevented by the face-down position.

Another aid in relieving sinus congestion, in addition to the multitude of mucus membrane shrinkers, is a hot shower, where the warm supersaturated moist air can be brought in through the nose, or the spray even be allowed to play gently on the face while breathing through the nose. The loosened-up secretions are then more readily blown out, and the above process repeated.

If the larynx has already become involved, some slow, deep breaths while in the shower help to loosen the secretions there and "poultice" the inflamed structures.

E. TREMAIN BRADLEY, M.D., solo practice of general surgery; retired, Norfolk, CT.

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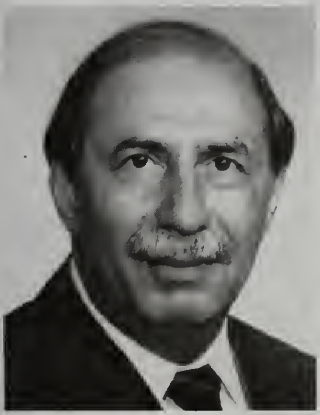
THE PRESIDENT'S PAGE

CSMS Bicentennial Preparations



Two hundred years ago in early 1791, George Washington was in the middle of his first term as President. Apparently, nobody was preparing to celebrate the tercentennial of Christopher Columbus' discovery of America. But in New Haven, in spite of earlier setbacks in 1785 and 1787, a small group of physicians was meeting and planning—perhaps plotting is the better word—to get legislation introduced and passed to charter the formation of a statewide medical society—even "to engage an attorney to attend the bill and get it through the Assembly."[1]

This had been attempted before, and more than once. Back in 1739, a medical society having been "long in contemplation," a few doctors had met in New Haven and called for a larger meeting there the following year. Fourteen physicians convened and remained in session for two days, "but did not agree and adjourned without day."[2] In 1763, eleven physicians of New London County actually petitioned the colonial legislature for a charter for a medical society, but "this movement...was negatived in the lower house."[3]

The next attempt came in 1767, when the "Medical Corporation in Litchfield County" held its first meeting in the dead of winter, with 31 "phisitions" in attendance. They examined two new physicians, adopted a code of ethics, and provided for "dissertations" at future meetings. In 1769, they prepared a "memorial" to lay before the General Assembly, thereby setting off a storm of opposition and hostility, perhaps from those "Quacks and Ignorant Pretenders" that they had set out to expose. The memorial got nowhere, and notices of meetings disappeared from the *Connecticut Courant* in 1772.[4] But in July of 1779, some of these same physicians met to institute the "Medical Society of Sharon." By October, its name had changed to the bombastic "First Medical Society in the Thirteen United States since their Independence." It met every year. In 1788 its name changed again to "The United Medical Society." At its last recorded meeting in 1790, its name was the "U.S. Medical Society." The following year, its leaders joined the seven year old "Medical Society of New Haven County" to help obtain the state medical society charter they had supported for so long.[5]

These are just a few of the references ferreted out of our archives by CSMS staff and sent off to county associations in hopes of inspiring budding medical historians among our colleagues to update the histories of their county and city medical associations, and to uncover stories about their local forebears for future publication.

We are only a year and a half away from observing the 200th anniversary of that second Tuesday in October, 1792, when the newly chartered Connecticut Medical Society convened the first meeting of its "President and Fellows" in Middletown. Preparations for our Bicentennial Celebration have been authorized by the Council. A Bicentennial Committee Chairman has been named, Dr. Craig Czarsty of Watertown. The 100,000 page archives of the Society are presently being microfilmed to assure their preservation for medical historians 200 years hence. A room at the CSMS headquarters building is to be prepared as a library to hold the actual volumes, and proposals to redecorate the rest of the building are under consideration by the Fiscal Subcommittee. The portraits of the 153 past presidents are being restored to be displayed in the Council chambers.

Let the call go out! Now is the time to begin celebrating Connecticut's House of Medicine, still together, still solid. We welcome your ideas, your articles, and help. CSMS is 198 years young, 6,000 physicians strong, and more vigorous than ever.

Mehdi Eslami, M.D.
President

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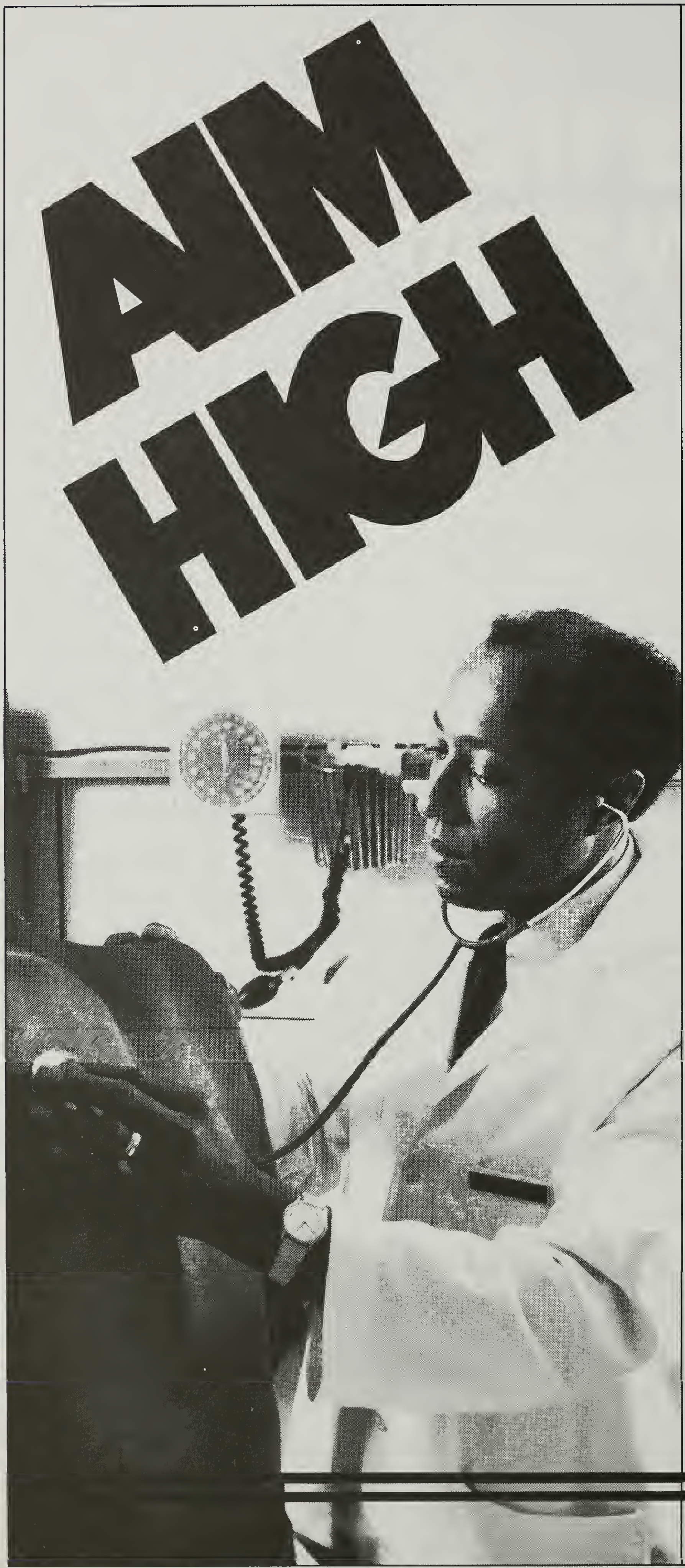

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Listening to Reading Aloud

ROBERT U. MASSEY, M.D.

A colleague in the dean's office used to have a cartoon on his wall showing a youngster looking through a hole in a high wooden fence surrounding a baseball park. "Sometimes, " he remarks, "you can see the whole ball game through a single knothole." For years, perhaps from my first day in the gross anatomy lab, that was what I believed about medicine, and in part still do. It has seemed to me that physicians, watching the world and its folly through their particularly exclusive knothole, may have the best view of all. But not the only one, and maybe not even the truest one; I recall a history professor from the main campus once remarking, "You guys walk around as though you were the only people that mattered."

For years I hardly allowed myself to read anything but medicine; a few minutes for the newspaper, an hour with *Time* or *Newsweek*, and an occasional medical biography. Trips to medical meetings, often by train, were occasions for catching up; I recall getting through Trevelyan's *History of England* during two or three trips, and all of Charles Williams's novels. Somehow I managed to read most of C.S. Lewis, Dorothy Sayers, and T.S. Eliot, probably much of that during two years in the army, but, all in all, not a remarkable accomplishment in over two decades. The thought of Osler's bed-side library served as a goad, and I did manage to read Thomas Browne's *Religio Medici* and Montaigne's essays, along with a little Bible and Shakespeare, kept, as Osler had suggested, handy at the bedside. During the last two decades I have spent fewer hours with medical journals and more hours trying to make up for lost time reading what we all know everyone should. It has been discouraging; I am a slow reader with a bad habit of returning to old favorites, and I am old enough to know that time is limited; ". . . the harbour is not far off," wrote Osler at 70.

But help is at hand! Books on tape are the happy solution. I have calculated that each week I waste five hours in my car, and I can finish the average recorded book in five or six hours. That should come to a book each week; it does not quite work out that way, but it is easy to finish a fairly long work, such as the *Odyssey* or *Great Expectations* in two weeks, and something short like *The Great Gatsby* in one. That means twenty books in a year during time that would otherwise be wasted in brooding or listening to the news over and over or to classical music that would sound better live or at home. Furthermore, I can choose my book, but public radio picks the quartet or sonata.

Some works are meant to be heard rather than read silently; the *Odyssey*, or *Murder in the Cathedral* are clearly for listening to, but works with detail such as descriptions of battles are best read with a map to refer to. Nevertheless, Bruce Catton's *Short History of the Civil War* was worth every one of the five hours it filled. Listening can never quite take place of the visual experience that goes with reading some prose and most poetry: the ease of turning back to reread a paragraph, or of finding and marking an especially felicitous line, but one can do both, listen and read later. I have purchased a complete set of Jane Austen's novels after hearing *Pride and Prejudice*, and asked for and got all of F. Scott Fitzgerald's as a Christmas gift.

Recorded Books[1] are not cheap, but renting them is one solution; the other is the town free library; I have found that public libraries are fairly well stocked although it is possible to exhaust their resources in a year or so. A librarian friend of mine has taken to checking out two at a time so as not to be caught half way to New Haven at the end of side two of the last tape! Having to switch on the radio, even public radio, cannot make up for the feeling of emptiness and despair that comes when the reader pronounces "the end."

I calculate I can double or triple my reading without getting up earlier or going to bed later, and without doing something silly like speed reading. In the days remaining it may yet be possible ". . . to get the education, if not of a scholar, at least of a gentleman."

REFERENCE

1. Recorded Books, Inc., Charlotte Hall, MD.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

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After *Cruzan* in Connecticut: Areas of Concern

JOSEPH M. HEALEY, J.D.

THE decision of the United States Supreme Court in the *Cruzan* case[1] had virtually no direct effect on the law of most states concerning medical decisions at the end of life. In holding that Missouri could establish procedural and evidentiary safeguards to assure that the rights of incompetent patients were not compromised, the court did not require other states (such as Connecticut) to adopt Missouri's standards, nor did it impose procedural requirements. In fact, by affirming the right of a competent patient to refuse treatment and by considering artificial nutrition and hydration as the equivalents of medical treatment, a majority of the justices confirmed the ethical and legal principles that have shaped the development of public policy since the case of Karen Quinlan and that have been followed in judicial and legislative activity by the vast majority of states. For example, in Connecticut the common law basis of such policies had been articulated by Justice Arthur Healey in his admirable concurring opinion in the *McConnell* case.[2]

Nonetheless, the *Cruzan* decision should stimulate discussion about the adequacy of a state's policies and procedures governing decisions for the incompetent patient at the end of life. In Connecticut, there are four aspects worth examining. First, there is an unbalanced overemphasis on the dangers of undertreatment. While it is important to protect patients from premature or unjustified abatement of beneficial treatment, it is also important to protect patients from the uncontrolled continuation of nonbeneficial treatment that serves to prolong death rather than enhance life. Overtreatment is as much a violation of the patient's right as is undertreatment. Patients should receive efficacious treatment. They should not be offered less nor forced to accept more.

Second, the role of the patient's wishes and the use of mechanisms for expressing them should be clarified and facilitated. The living will, the advanced designation of a conservator, and the durable power of attorney should be recognized as vehicles available to the currently competent patient for the use in influencing or controlling decisions if the patient becomes incompetent. Current Connecticut legislation has created confusion about the scope of surrogate decisions and the factors which might override a currently incompetent person's previously expressed wishes. Closely related is the third aspect: what the role of the patient's family or next of kin should be. This aspect involves whether the family members must be formally recognized as conservator to be permitted participation in decisions for the incompetent patient.

Finally, the evidence supporting the recognition of artificial nutrition and hydration as the equivalents of medical treatment is overwhelming. Yet, Connecticut legislation continues to ignore this evidence and the experience of virtually every other state to deal with this issue. It is time to recognize the distinctive medical context and goals of artificial nutrition and hydration.

Three legitimate areas of state concern exist. They should be the foundation of our state's public policy in this area. First, the state has an interest in assuring that the medical judgments underlying decisions at the end of life are accurately and appropriately determined. An understanding of diagnosis and prognosis is the first step in assessing the options available at the end of life for the incompetent patient. Second, the state has an interest in assuring that the patient's wishes, if known, are followed, unless they are outweighed by other legitimate factors. Third, the state has an interest in assuring the surrogate decisionmakers are implementing the patient's wishes or are acting in the patient's best interests, without reflecting a contaminating bias. How these areas of concern should be the foundation of a revised public policy in Connecticut will be the subject of next month's column.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

REFERENCES

1. *Cruzan v. Director, Missouri Dept. of Health, et al,* 58 LW 4916 (1990).
2. *McConnell v. Beverly Enterprise-Connecticut.,* Inc., 209 *Conn* 692, 711 (1989).

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From the Executive Director's Office

COUNCIL MINUTES

Thursday, January 10, 1991

Attendance

Present in addition to the Chairman, Dr. Joseph C. Czarsty were Drs. Ahamed, Beck, Blum, Bobruff, Cottle, Dardick, Deren, Eslami, Franklin, Freedman, Hollister, Intravia, Kamens, Keating, Lesnik, McDonnell, Meridy, Orphanos, Redmond, Reyelt, Robbins, Sadowski, Sosa, Van Nostrand, Zanker, and Zeppieri.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Garofalo, Ms. Ballou, Mrs. Connelly, Dr. Van Syckle, Dr. Scialla, Mr. Tomat (FCMA), Mr. Coffey (HCMA), and Mr. Freberg (NHCMA).

Absent were: Drs. Brooks, Chmieleski, Fox, Parikh, Petrie, Petro, Welch, Wetstone, and Wolfson.

Moment of Silence

George A. Bonner, M.D., Guilford

Dr. Czarsty requested the Council members to stand for a moment of silence in memory of George A. Bonner, M.D., who died on November 30, 1991. Dr. Bonner held many offices at county and state level and always served with distinction.

Reports on Related Organizations

M.D. Health Plan: Guy W. Van Syckle, M.D., Medical Director of MDHP, reported that membership continues to grow and that as of January 1, there were 49,875 members which is ahead of what was projected. Two new products, the open-ended plan and the self-funded program are progressing, but have not yet contributed much to the growth of membership. There are now over 2700 physicians participating and they are increasing by 50-60 per month. There is still a shortage in the pediatric and infertility specialty groups. Many complaints about the CSMS-IPA ambulatory care criteria ("Patterns") were due to incorrect CPT codes and have now been resolved. He also reported that criteria for payment are set by peers after careful consideration, and in general if a claim is kicked out of Patterns, there is substantial reason. He further reported that a new maximum fee schedule has been established, as of February 1, 1991, the fee to join the plan for primary care physicians will be $500.00 and specialists will pay $750.00. The fee for newly licensed physicians will remain at the previous rates. Due to a new law enacted by the 1990 legislature, non-M.D. providers must now be treated equally as to patient access. It was reported that mutually satisfactory meetings have been held with the non-M.D. providers. They are subject to the same 20% withhold, the specialists' entrance fee, and utilization review.

Report of the President

Dr. Eslami commented on the election of the new Governor and the changes in the legislature. He also reported that all members of the AMA delegation attended the AMA meeting which was extremely interesting. He stated that CSMS was now in the pre-anniversary year of its 200th anniversary and that he would be meeting with his committee in planning for the anniversary.

CSMS Section Meetings: Dr. Eslami reported that after trying several different formats as to the time and subject, it appears there is no real interest in the scientific program that was held in conjunction with the Annual Meeting of the House of Delegates. Last year, it was decided to forego the general scientific program and devote the entire second day to specialty section meetings, and only five sections indicated their willingness to meet at the time designated. According to the CSMS Bylaws, each active section shall hold an annual meeting during the annual meeting of the Scientific Assembly. Many of the sections do hold meetings annually, but do not find it convenient to meet on the day following the House of Delegates. Following discussion, it was VOTED to approve the following motions:

That the general scientific program, which according to the Bylaws is to be held the day following the House of Delegates meeting, be discontinued. (Note: A scientific program could be held at any time, if so desired, but would not be mandated for a specific time.)

That it not be mandatory for Sections to meet the day following the House of Delegates meeting, but that they be required to meet at least once during each year for the purpose of electing officers and conducting the business of the Section. Also, failure of any Section not meeting for three consecutive years will be cause for the section to automatically lose its active status and shall be considered cause for the House of Delegates to withdraw authorization for the Section.

That the staff be instructed to prepare proper Bylaw amendments to implement these changes.

Report of the Executive Director

900 Numbers for Calls to Physicians: A written proposal received for Sausalito, California, concerning the use of 900 or credit card service enabling callers to talk

directly to a physicians for medical consultation was distributed with the agenda of the Council meeting. The purpose of the communication was to seek some type of endorsement of this program. Mr. Norbeck reported that he had discused this subject with an attorney at the AMA who stated that many questions and concerns arise, such as questions on licensure, malpractice liability and competence, ethical issues such as confidentiality and whether professional liability insurance carriers would cover physicians participating in this program. Also he felt that even though the caller would be instructed not to seek or ask for diagnosis, in all probability the caller would ask for one. It was reported that if any information is obtained by the AMA, it will be forwarded to the CSMS office. It was VOTED to table the subject.

Speaking Engagements: Mr. Norbeck reported that he had the opportunity to address two senior citizen groups during the past few weeks. One was in Stratford for Sikorsky retirees and the other was the National Conservation Corps in Enfield. He further stated that both were very receptive to the comments on Medicare and the CSMS position on mandatory assignment, and again impressed upon him the feeling that getting the word out is half the battle. He commented that more people than we realize will agree with the CSMS position, if we can get into the communities to discuss the issues.

Public Affairs Pamphlets: Mr. Norbeck informed the Council that the pamphlets were complete and placed before each Council member. He then deferred to Dr. Ahamed, Chairman of the Committee on Public Affairs, to give the Council an update on the CSMS public service pamphlets. Dr. Ahamed reported that copies of the pamphlets are in the mail to every member of CSMS and additional copies will be available to fill requests from physicians for their office waiting rooms. Copies will also be available in Spanish. He also commended the CSMS staff for developing these pamphlets.

Report of AMA Delegation

A summary of the actions taken at the 1990 Interim Meeting of the AMA House of Delegates was mailed with the agenda to all Council members. Also mailed to the Councilors was a document entitled "AMA Legislative and Regulatory Successes-1990—The Year in Review". Dr. Freedman, AMA Delegate, asked that the members of the Council read these documents carefully so that the would become familiar with the activities of the AMA. He mentioned that the anti-hassle bill was being carefully monitored; that the triplicate prescription issue was defeated and that the National Practitioner Data Bank continues to be a problem and is being watched very carefully. It was VOTED to receive the report for information.

Resolutions Referred from the House of Delegates

(a) Resolution on Facilitating the Identification of HIV Infected Patients

The following resolution was referred to the Council by the House of Delegates with the recommendation that an Ad Hoc Committee be formed by CSMS to be broadly constituted in membership to include representatives from appropriate clinical specialties so that a consensus can be obtained in guiding the Committee on Legislation.

"RESOLVED, that the Connecticut State Medical Society approach the Connecticut General Assembly to seek a modification of Connecticut's restrictive practice on AIDS testing in order to facilitate the earlier diagnosis and treatment of infected patients."

It was VOTED to table a motion that the CSMS House of Delegates adopt the AMA position on HIV infections and that they be classified as a communicable and Sexually Transmitted Disease (STD) and that medically proper control attendant to its classification also be supported until the Ad Hoc Committee, which will be appointed by the Chairman of the Council, reports on the Fairfield resolution. It was further voted that the motion and supporting material supplied to the Council be distributed to the Ad Hoc Committee following its appointment.

(b) Resolution on Disease Prevention Programs

The subject resolution was presented to the House of Delegates which voted not to receive it for action and referred it to the Council for consideration. Following discussion, it was VOTED not to adopt the resolution and it was further VOTED that the resolution be returned to the physician who drafted it with the request that a new resolution be submitted to the Council at its next meeting defining more clearly the objectives of the resolution.

(c) Committee on Medicare

The House of Delegates voted to disband the present Ad Hoc Committee on Medicare and established a standing Committee on Medicare. The purpose of the committee is to meet on a routine basis with representatives of the Medicare carrier for the purpose of advising the carrier on issues of policy and procedures, and the committee should meet at least quarterly. It was VOTED that the present Ad Hoc Committee become the standing committee and that Stephen Levinson, M.D., Hartford become the chairman: The committee members are as follows:

Stephen Levinson, M.D., Fairfield, Chairman
Timothy F. Brewer, M.D., Old Saybrook
Neil H. Brooks, M.D., Rockville
Paul Dolinsky, M.D., West Hartford
Dickerman Hollister, Jr., M.D., Greenwich
Sandra B. Raff, M.D., Middletown
Boris G. Rifkin, M.D., New Haven
Ronald Tietjen, M.D., Danbury
Andrew D. Weinberg, M.D., Branford

Nominations for Positions on AMA Councils

It was VOTED to nominate Jerome K. Freedman, M.D., New Haven, to the AMA Council on Legislation and Stewart J. Petrie, M.D., Woodbridge, to the American Political Action Committee (AMPAC).

Worker's Compensation Symposium

It was VOTED to approve the underwriting of up to $6,000., if necessary, for the disabled workers' symposium which is to be held on October 16, 17, 1991 a the Treadway Inn, Cromwell, and which is co-sponsored by the New London County Medical Association and the Workers' Compensation Commission. It was further VOTED to provide labels for two mailings to members of CSMS. The Council gave Dr. Zeppieri a round of applause for his leadership in developing these symposiums. Dr. Zeppieri further reported that as a result of the last two symposiums, there is a net gain of $34,000. They have hired a business manager and are in the process of incorporating and obtaining a tax-exempt number. They are also sponsoring a statewide essay contest with a $500 scholarship for high school juniors and seniors. The topic would be exploration of the problems of work disability in terms of economic impact on the community.

Dr. Zeppieri also reported that he has attended the meeting of the International Association of Industrial Accident Boards and Commissions and serves as a consultant on the medical committee. The sole resolution to pass at the IAIABC meeting was to have their commissions form liaisons with their state medical societies.

Report on Meeting of AMA Hospital Medical Staff Section

Howard Meridy, M.D., submitted a written report on his attendance at the AMA Hospital Medical Staff meeting held in Orlando, Florida on November 29-December 2, 1990. He reported that the program included an excellent educational program on economic credentialing. Three reference committees heard 60 resolutions which covered health care costs, cost containment, drug testing, testing for aids, and an assortment of other medical issues. It was VOTED to receive the report as information. Dr. Stanley Keating had a copy of a newsletter from the California Society of Anesthesiologists, Inc. on the subject of economic credentialing, which was copied and distributed to all members of the Council.

Joint Conference Committee with Pharmaceutical Association

It was VOTED to approve a letter from the secretary of the subject committee requesting Council approval on a proposed letter to be addressed to several sources offering discount coupons on prescriptions.

Committee on Maternal Mortality and Morbidity

It was VOTED to approve a letter prepared by the subject committee to be mailed to all chairman of the obstetrical departments of all Connecticut hospitals seeking information on maternal mortality.

Connecticut Blue Ribbon Commission on State Health Insurance

The report of the Blue Ribbon Commission entitled "A Proposal to Expand Access to Health Care in Connecticut" was referred to the Committee on Statewide Medical Planning for review and report. It was VOTED to approve the following recommendations made by the Committee on Statewide Medical Planning:

That CSMS generally support 90-134 (the law implementing the Blue Ribbon Commission report) since it is in line with AMA's Health Access America proposal.

That the CSMS Committee on Legislation and staff aggressively lobby for CSMS representation on legislative committees that need or require physician input.

That the Council allow the Committee on Statewide Medical Planning to monitor, participate and respond to proposals made by the Health Care Access Commission where appropriate.

Patient Care Quality Standards for Alcohol and Drug Related Trauma

It was VOTED to approve the following recommendations which were submitted by the CSMS Committee on Public Health:

(a) Chemical testing for BAC/other drugs is recommended as a clinical standard for injured individuals. Blood alcohol levels and urine drug screens should be considered for all trauma patients under treatment. Children under 14 years of age and students injured during school sports will be excluded from testing, unless there is a suspicion of alcohol or drug involvement.

(b) The attending physician will address the issue of a positive blood alcohol level or positive urine drug screen in a trauma patient through appropriate and confidential referral, consultation, or treatment for any underlying condition of substance abuse.

(c) Ongoing quality assurance evaluations should be performed six months apart after approval of this policy.

(d) Continuing medical education in diagnosis and treatment of drug and alcohol abuse will be promoted within hospital medical staffs.

(e) Individual clinicians, committed to the effective treatment of alcohol/drug related trauma patients, ask that the institutions in which they work make a similar commitment so that appropriate procedures may be developed.

Recommendations from Committee on Public Health

(a) Universal Prenatal Screening of Women for Hepatitis B, Surface Antigen: It was VOTED to approve the recommendation of the Committee that CSMS endorse the concept of routine HBsAG screening as recommended by ACOG and AAP, and that legislation to this end, to take effect in 1992, be introduced and supported by CSMS. A draft of the legislative proposal was included with the recommendation.

(b) Healthy Connecticut Coalition: It was VOTED to table the recommendation that CSMS continue its participation and support of the Coalition in is effort to promote the provision of the full range of public health services to the residents in those areas of the state not yet served by fully staffed public health districts until further information is available.

American Cancer Society, Connecticut Division

It was VOTED to approve a request from the Cancer Society for CSMS to co-sponsor a National Cancer Institute training program for physicians, "How to Help Your Patients to Stop Smoking" on April 13, 1991.

Committee on Insurance

Anthony V. Scialla, M.D., Chairman of the Committee on Insurance, made a lengthy presentation to the Council concerning proposals to make changes in the endorsement of the CSMS disability program which included the action taken by the Committee. Several documents were also reviewed which were submitted by various members of the Committee. Following discussion, it was VOTED that the issue of endorsment of an individually underwritten disability insurance plan was of such importance that consideration of the subject should be undertaken by a larger percentage of the committee members present before any conclusions or recommendations are proposed.

Committee on Physician Health

The Committee revised the motion that was previously submitted and published in the Council agenda and distributed a revised motion which is as follows:

In an effort to maintain the effectiveness and confidentially of the Physician Health Program, while continuing to work within the framework and spirit of our Protocol Agreement with the State of Connecticut's Department of Health Services, the Committee on Physician Health recommended to the Council that the Council endorse the policy of this Committee as follows:

(a) Not to reveal the identity of a person who reports to the Committee the name of a physician who is or may be unable to practice medicine with reasonable skill or safety and

(b) Not to testify at a hearing before the Medical Examining Board in those cases when the Committee has exhausted its resources and has turned the case over to the Department of Health Services and

(c) That when served with a supoena to testify, to employ all appropriate legal means necessary to avoid testifying.

It was VOTED to approve the Committee's motion.

Life Members

It was VOTED to receive, as information, the names of the following physicians who were granted Life Membership as of 1/1/91:

Lawrence S. Carlton, M.D., Canton Ctr. (H)
Samuel Grubin, M.D., Southbury (NH)
Louis M. Yavetz, M.D., Waterbury (NH)

Dates of Future Council Meetings

Wednesday, February 27, 1991

Wednesday, April 3, 1991

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on January 10, 1991. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested members of the Society.*

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities* should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203)-865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities.

***Physicians wishing to locate* in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

Announcements on the Physician Placement Service page under Classified Advertising are charged at the regular Classified Advertising rate.

OPPORTUNITIES FOR PRACTICE

AMBULATORY CARE

Physician needed full time for an ambulatory care center in the greater Bridgeport area. Broad general medical, orthopedic, and minor surgery skills required. F.P., E.M. and general I.M. preferred. Salary and benefits commensurate with experience. Please send C.V. to Robert E. Sterling, M.D., 15 Armstrong Rd., Shelton, CT 06484.

EMERGENCY MEDICINE

A full-time position is available for a BE/BC Emergency physician at Day Kimball Hospital. Position is primarily clinical with some administrative/QA responsibilities. Person would serve as assistant director of Emergency Department. Excellent salary and benefits. Please contact Donald M. Michaels, Ph.D., Day Kimball Hospital, 320 Pomfret St., Putnam, CT 06260 or call (203) 928-6541.

FAMILY PRACTICE

Connecticut—Family Practice— established group seeks 4th provider BC/BE for recent vacancy. Competitive salary with partnership possibility. Pediatrics, Office surg. No Obstetrics. Fully equipped office including lab and X-Ray. Great benefits and growth potential. So. West. CT location. Easy metropolitan access. Hospital affiliate of Yale School of Medicine. Send Resume to FHCA, C/O J. Engel, 330 Bridgeport Ave., Shelton, CT 06484.

Four doctor family practice group seeks board certified/board eligible F.P. to join them in May 1991 (or soon after). Busy office and hospital practice including ICU, CCU, Pediatric, and Nursery privileges. (No O.B.) Shoreline community with excellent schools and quality of life. Favorable call schedule. Both full-time and part-time considered. Send CV to: Dr. Steven W. Luger, 8 Davis Rd., Old Lyme, CT 06371 or call (203) 434-8300.

GENERAL SURGERY

BC/BE General Surgeon with vascular experience to join two established BC surgeons in unique rural Connecticut community. Salary leading to partnership. Reply with CV to Box 387, Sharon, CT 06069.

Senior general surgeon is seeking young general surgeon BE/BC to replace young general surgeon partner who plans to relocate. Applicant should be qualified to perform laparoscopic surgery and endoscopic procedures. Position will be available on or about July 1, 1991. Send letter of interest and CV to CSMS, c/o GS/KW.

INTERNAL MEDICINE

South Central Connecticut—Shoreline. Active four person practice seeks BE/BC, American trained internist. Excellent opportunity to build your future. Early full partnership. Please reply to: Internal Medicine of Milford, P.C., P.O. Box 549, Milford, CT 06460.

Internal medicine physician to join busy solo practice in Central Connecticut. Reply to: 245 North Main St., Wallingford, CT 06492.

BC/BE internist to assume large, solo practice along Branford shoreline established nine years ago. Fully-equipped, modern, computerized office minutes from New Haven. Large nursing home practice can be assumed if desired. Opportunity for academic appointment at Yale and patients admitted to Yale-New Haven Hospital. Physician activated for duty in Gulf wishes to turn practice over. Assume practice and rent office. Cross-coverage with another internist already established. Send CV and letter of interest as soon as possible to Dr. A.D. Weinberg, 144 North Main St., Branford, CT 06405.

Hartford—Available (due to retirement) large established private INTERNAL MEDICINE PRACTICE. Hartford hospital associated, all equipment, computer billing, favorable finances available presently. Write CSMS, c/o IM/QV.

NEUROLOGY

Connecticut BC/BE neurologist wanted to join established five person group in single hospital private practice setting. Competitive salary with benefits leading to partnership. For details fax CV to (203) 790-6375 or write Jan Mashman, M.D., Associated Neurologists, 69 Sand Pit Rd., Danbury, CT 06810-4088.

PART-TIME

The U.S. Department of Veterans Affairs, Hartford Regional office has a vacancy for a permanent part-time medical officer (20 hours per week) to review evidence and make determinations (disability evaluation). No patient care involved. Hourly salary: $18.58 to $23.44. Must be a U.S. citizen and have a valid Doctor of Medicine or Doctor of Osteopathy degree. Proof of medical degree required. Benefits include: health benefits, life insurance, vacation time, sick leave, generous retirement plan, and a rate of $19,892 to $24,464 per annum. Interested applicants call Mrs. Kaye Hoffman or Mr. Clement Pachnieski for an appointment or necessary applications at (203) 240-3409. VA Regional Office, Personnel Division (25), 450 Main St., Hartford, CT 06103. An Equal Opportunity Employer.

PEDIATRICS

Coastal Connecticut. BC/BE pediatrician to join busy two-person practice in beautiful shoreline community. University affiliated hospital nearby. Excellent salary, production bonus, early partnership. Available July 1991. Send CV to CSMS, c/o, PED/PY.

Exceptional opportunity to join a pediatric group practice of four BC/BE pediatricians. Practice is located in shoreline community five miles from Yale-New Haven Medical Center, our chief hospital affiliation. Sole owner is original partner of practice established in 1955. Starting salary $80,000.00 per year with buy-in option after one year. Part-time position also available. Call (203) 248-4846 after any evening after 8:00 P.M.

Connecticut—The Stamford Hospital, staff pediatrician, PL-3 (equivalent or beyond). Busy nursery, active OPD, small inpatient (includes night call). CV and references to: The Stamford Hospital, Dept. of Pediatrics, P.O. Box 9317, Stamford, CT 06904-9317. (203) 325-7082.

PRIMARY CARE/INTERNAL MEDICINE

Excellent opportunity for physician interested in Primary Care to take over existing practice established over 20 years. Must purchase existing equipment. Contact Boris Pukay, M.D. (203) 536-3165.

RADIOLOGY

Radiologist to join three man practice covering two private offices and two hospitals in Eastern CT and RI. Competitive salary, excellent living conditions in shoreline community. Interested applicants may contact John W. Foster, Jr., M.D. at (401) 447-1766.

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

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High Grade Astrocytomas in Children: Hartford Hospital Experience

A.J. HALL, M.D., V.G. WAGLE, M.D., AND T. VOYTEK, M.D.

ABSTRACT—Anaplastic astrocytomas (AA) and glioblastoma multiforme (GBM), although common primary tumors of the brain in adults, are relatively infrequent in children. Eleven patients with these lesions were treated at our hospital over a period of 20 years. This retrospective study of high-grade gliomas examines numerous factors that could help in the future management of these tumors.

Introduction

ASTROCYTIC tumors including glioblastoma multiforme (GBM) and brainstem gliomas account for 36% to 65% of all primary central nervous system (CNS) tumors in children, with an incidence therefore of approximately one per 100,000 per year.[1,2,3]

We conducted a 20-year retrospective study of patients aged 15 and under with anaplastic astrocytomas (AA) and glioblastoma multiforme (GBM), treated at Hartford Hospital, from 1968 to 1987.[4] Anaplastic astrocytomas and glioblastoma multiforme, which are high-grade primary malignant tumors are less common in children and form a small percentage of primary brain tumors when compared to adults.

Materials and Methods

The records of the Hartford Hospital tumor registry were examined for all cases of CNS tumors occurring in children between the years 1968 and 1987. The cases of children under 16 years of age at diagnosis were reviewed and several items were recorded from these files.

Sex, race, age at diagnosis by histopathologic analysis, presenting symptoms, amount of tumor resected, duration of hospitalization, rehospitalizations, reoperations, dose of radiotherapy and mode of administration, number of recurrences and age at recurrence, use of chemotherapy, and length of survival were analyzed in an attempt to identify significant factors in the diagnosis, prognosis, and management of these patients. The histopathologic diagnoses were reviewed by one of us (T.V.) and compared to the original diagnoses given at the time of initial operation. The amount of tumor resection was obtained from the operative record.

Results

Between 1968 and 1987, 73 patients under 16 years of age presented at Hartford Hospital with a diagnosis of primary or metastatic CNS tumors. The diagnoses were made either at admission or during their initial hospitalization. Of these 73, 11 patients had histopathologically proven AA or GBM. Their demographic characteristics are shown in Table 1. The patients with AA ranged in age from two to 10 years at time of diagnosis. Sixty percent of them were Caucasian and 40% were Hispanic. The GBM patients ranged in age from six to 15 years at the time of diagnosis. Sixty-six percent (4 out of 6) of the patients with GBM were Caucasian and the other two were Afro-American. The signs and symptoms at time of presentation were myriad (Table 2). The most common signs and symptoms were different for the two categories of tumors. Symptom presentation was related to tumor location. Half of the GBMs were in the cerebral hemispheres, and the rest were distributed equally among the spinal cord, cerebellum, and pons. Only two of the five AAs were in the cerebral hemispheres. The others were in the spinal cord (1), and an unspecified brainstem location(1).

The duration of time between the onset of symptoms and diagnosis averaged 23.25 days for the AA patients and 11.25 days for the GBM patients. The patient CM with GBM was not included in the analysis along with the other cases, since there was an initial delay in diagnosis.

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Table 1
Patient Characteristics

Patients	Age at Dx	Sex	Race	Sx Duration	Survival	Rehospitalized	Recurrences	Location
AA								
M.Ma	2 yr	M	H	?	6 mos	1	1	Frontal
DS	6 yr	F	C	17 days	12 mos	●	●	B.stem
SS	6 yr	M	C	2 mos	12 mos	1	1	Pontine
M.Mc	10 yr	F	C	17 days	7 mos	0	0	C3-T1
JV	14 yr	F	H	1 day	72 mos	0	0	Temporal
Means	7.6 yr	-	-	23.25 days	21.8 mos	1	0.6	-
GBM								
LC	6 yr	C	A	4 days	25 mos	5	2	Pontine
CM	6 yr	F	A	24 mos	12 mos	2	0	R hemisphere
JW	7 yr	M	C	?	1 mos	1	0	Parietal
SC	10 yr	M	C	7 days	5 mos	●	1	Spinal cord
GJ	14 yr	M	C	4 days	3 mos	1	1	Cerebellum
FG	15 yr	M	C	1 mo	13 mos	2	2	Occipitopar
Means	9.3 yr	-	-	11.25# days	9.8 mos	2.3	0.83	-

Key: # - excludes patient CM; F - female; M - male; C - Caucasian; A - African American; H - Hispanic

The survival after surgery of the patients with AA ranged from six months to six years, with a mean of 21.8 months. The range for the patients with GBM was three months to 25 months with a mean of 9.8 months. These figures, and the others obtained in this study, were analyzed by analysis of variance but no statistical significance was obtained because of the small cohort of this study.

The patients with AA had an average of 0.6 recurrences before death. Those patients with GBM had a mean of 0.83 recurrences before death. The patients with AA had a mean of one rehospitalization before death. These hospitalizations were for a variety of reasons including recurrence, reoperation, or other illness. The patients with GBM had a mean of 2.3 rehospitalizations before death.

The time from operation to first recurrence of the original disease or progression of neurologic symptoms was recorded for three of the patients with AA and four of the patients with GBM. The means were 8.8 months for the patients with AA and 10 months for the patients with GBM (Table 3).

Nine patients received postoperative radiotherapy. The doses administered in radiotherapy are shown in Table 4. The average dose given to the children with AA was 5,985.5 cGy. The average dose given to children with GBM was 4,764.6 cGy. The patient who received 232 cGy died well before completion of radiation therapy. The radiation therapy given to the patients was not standardized.

No patients had total tumor resection and the majority from both groups underwent subtotal resections. A relationship was not found between the amount of resection performed and survival. For patient L.C., a second operation was performed for tumor recurrence. However, the lesion thought to be a tumor on imaging studies turned out to be radiation necrosis exerting a mass effect in the pons.

Discussion

Eleven proven cases of high-grade gliomas were treated between 1968 and 1987 at Hartford Hospital. These numbers by no means indicate the actual number of high-grade gliomas occurring in this community, since many patients, after initial evaluation, seek treatment at other centers in and around New England.

We have found the tumors to occur in Caucasian, Hispanic, and African-American children. Oddly, all the Hispanic children in our series had AA while all the African-American children had GBM.

All our patients are known to have died except one who was lost to follow-up in December 1988. A slight difference was seen in the average time of survival between the patients with GBM and AA. The difference in histopathology in our series does suggest a way to predict survival. Another finding was that the GBM patients had a shorter time period between the onset of symptoms and diagnosis. This more rapid presentation most likely is related to the more aggressive nature of glioblastomas as compared to anaplastic astrocytomas.

The average age at diagnosis was slightly lower for the children with AA. The average age at diagnosis was under 10 years for both AA and GBM (Table 1). Only three of the 11 children were teenagers at diagnosis. This is in concordance with most published series of pediatric CNS neoplasms wherein the majority of the tumors occur in children under 10 years of age.[5,1]

One of the findings of our series was that the children with GBM had an average of two times more rehospitalizations than the children with AA. These rehospitalizations reflected a more turbulent course in children with GBM. They more often were ill or required hospitalization for shunts, reoperations, and other illnesses. Other investigators have not emphasized this finding in their series of children with astrocytomas. It would be of interest to see if this holds true for larger series.

Although the number of rehospitalizations was higher for the children with GBM, the average time for clinical progression of the neoplastic disease was shorter for the children with AA. This finding is possibly skewed as the data were adequately recorded for three of the five patients with AA and for four of the six patients with GBM. One of the patients with AA (patient JV) survived for six years and had no documented progression of her disease. Histologic sections were unavailable for review by us, although we included the patient based on the initial report.

Although overall a wide variety of signs and symptoms were seen in these children at the time of their initial presentation, individually these children exhibited only one or two of the signs and symptoms listed in Table 2. Vomiting and ataxia were the most common symptoms.

The extent of tumor resection was not a predictor of length of survival in this series. Epstein and Wisoff in 1988 also showed that the extent of tumor resection did not correlate with survival of children with brainstem gliomas of all grades (I to IV).[6] Our findings relate only to high-grade astrocytomas and may merit consideration when planning surgical resections in children.

Conclusions

1. The patients with AA progressed clinically faster but lived longer.
2. The patients with GBM presented earlier in their course and had more hospital visits in their survival.

Table 2
Symptoms at Initial Presentation

Anaplastic Astrocytoma		**Glioblastoma Multiforme**	
Symptom	**No. of patients**	**Symptom**	**No. of patients**
Vomiting	5	Paresis	4
Ataxia	5	Ataxia	3
Nausea	3	Vomiting	3
Headache	3	Personality change	2
Nystagmus	3	Cranial nerve sign	2
Visual change	3	Headache	2
Seizure	2	Sensory change	1
Paresis	2	Nystagmus	1
Meningismus	2	Speech change	1
Lethargy	2	Seizure	1
Falling	1	Papilledema	1
Sensory change	1	Lethargy	1
Pharyngeal symptoms	1	Insomnia	1
Dysdiadochokinesia	1	Agitation	1
Speech change	1	Diplopia	1
Eye pain	1	Anisocoria	1

Table 3
Time to Progression from Initial Operation

Anaplastic Astrocytoma		Glioblastoma Multiforme	
Patient	**Time**	**Patient**	**Time**
2 yo M	5.5 mos	4 yo F	23 mos
6 yo F	10 mos	10 yo M	2 mos
6 yo M	11 mos	14 yo M	2 mos
		15 yo M	13 mos
	Mean: 8.8 mos		**Mean: 10 mos**

Table 4
Radiation Dosages (cGy)

Anaplastic Astrocytoma		Glioblastoma Multiforme	
Patient	**Dose**	**Patient**	**Dose**
2 yo male	4500	4 yo female	9546
6 yo female	4002	6 yo female	4110
10 yo male	5040	7 yo male	232
14 yo female	10400	10 yo male	3994
		15 yo male	5941
	Mean: 5985.5		Mean: 4764.6

3. The extent of tumor resection was not related to survival.
4. Preoperatively it was difficult to distinguish radiation necrosis from tumor recurrence. Even with advanced imaging techniques that exist today, distinguishing tumor from radiation necrosis is still extremely difficult.

Acknowledgements

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The Viability of Abstinence in an Inner City Adolescent Population

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AND BARBARA BEDNEY, C.S.W.

ABSTRACT—The purpose of our study was to investigate the different variables that lead teenagers to have sex, the psychological consequences they face as a result of having sex, and the viability of abstinence as an alternative. We used an anonymous self-administered questionnaire to address such issues as age of first intercourse and influence of family, peers, and physical consequences (ie, pregnancy, sexually transmitted diseases, and AIDS). Our research concluded that not only are teens having sexual intercourse at early ages, but that this early experience may be having detrimental consequences on their levels of self-esteem. We propose that the adolescent's search for identity is a strong motivational factor in engaging in sexual intercourse at an early age, and that delaying first coitus or choosing abstinence as a birth control method can be both empowering and ego-enhancing for the teenage client.

Introduction

MANY young people in the United States are engaging in sexual intercourse at progressively earlier ages.

In our patient population under study we have attempted to understand and quantify the wide variety of reasons that impel young people to have sex and the viability of abstinence as a choice. It has been reported in several studies that social pressure from peers is one of the primary reasons adolescents do not postpone intercourse. We addressed other variables, among others, love and sexual gratification.

The risks and consequences of early sexual intercourse for teenagers have been evaluated in terms of both physical and economic effects. However, there has been little research data available to assess psychological and social consequences. We have attempted to address and clarify these areas of importance.

The behavior of adolescents is very much influenced by the messages conveyed by the attitudes and practices of those around them, that is, parents, peers, teachers, and the media. Data also indicate that once a teenager begins having intercourse, he or she will continue to do so. In a study by the American Public Health Association, the average age of first intercourse for Caucasian males and females and black females was slightly over 15 years, and for black males just under age 12.[1,2]

It was our attempt in undertaking this study to obtain data to assist us in counseling our youths who are sexually active or who are considering having intercourse. We hope to help our young people to be able to resist social and peer pressure which can be the most important educational component to add to basic fact giving. We should help those teens who have chosen not to be sexually active to feel comfortable with their choice, and should continue to tell them that if they do not want to have intercourse, they do not have to. Also, regardless of past sexual activity, they always have the option and right to say no to any future sexual experiences.

Methods

Our research was conducted at an adolescent health clinic in an inner city area serving largely black and Hispanic youth between the ages of 13 and 21. We chose as our tool an anonymous, self-administered questionnaire, feeling that teenagers would be more comfortable and uninhibited in this format than in any other. The health educator of the clinic and the medical director designed the two-page questionnaire. Using both open- and closed-ended questions we asked respondents to address physical variables, such as pregnancy, sexually transmitted diseases, and AIDS, as well as psychological, social, religious, moral, and ethical issues. The questionnaires were dis-

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tributed to patients by nonresearch staff during intake and counseling sessions. Patients with scheduled appointments were offered an opportunity to participate in the study. They were told that their participation in the study was voluntary and their answers would be anonymous. The questionnaires were completed without staff being present and were then returned by the patients themselves to an unmarked box in the clinic. The questionnaires were distributed for one month and a total of 54 were given out. Some of these were filled out completely, some incompletely, and in some there was more than one answer to certain questions.

Results

Of the 54 respondents who filled out the questionnaire, 38 (70.4%) were female and 11 (20.4%) were male. Five respondents did not indicate gender and their answers have not been included in the results. Of the remaining 49, 22 (44.9%) were black, 22 (44.9%) were Hispanic, one (2%) was white, and four (8.2%) did not indicate their race. The average age of the females was 17.4 years with a range of 14 to 21; the average age of the males was 18.8 years with a range of 15 to 22.

Our results confirmed what has long been known, namely that teenagers are becoming sexually active at very early ages. The average age of first sexual intercourse for females was 15.1, and for males 14.4. Even more indicative of this trend, results showed that, for females, 13.9% had intercourse by age 13; 38.9% by age 14; 63.8% by age 15; 80% by age 16; and 94.4% by age 17. The ages for the males are even younger. At the age of 11, 30% indicated they had already had sexual intercourse; 70% by age 15; 90% by age 17; and 100% by age 19.

What is perhaps most interesting about these results is how they contrast with what the teens indicated to be their attitudes towards becoming sexually active. Despite the early age of intercourse for both females and males, 26 of 38 (68.4%) females said they "respected" or saw as "smart" girls who had decided not to have sexual intercourse until they were older or married; and 22 of 38 (57.7%) felt the same towards boys who waited. The results of the males indicated that eight of 11 (72.7%) said they "respected," or otherwise "approved" of girls who waited and six of 10 (60%) said they felt the same towards boys who wait.

Similarly and again in contrast to their own experience, 33 of 38 (86.8%) females approved of teens who decide not to have sex to avoid pregnancy, STDs, and AIDS, yet only 13 of 36 (36.1%) said these reasons would keep themselves from having sex. The other 23 (63.6%) said they would use protection or have sex with only one partner to avoid these consequences. The data for the males indicate that seven of 11 (63.6%) approved of not having sex for fear of pregnancy, STDs, and AIDS, but the majority, although a smaller majority than the females, six of 11 (54.5%) said this would not keep them from having sex, again citing protection and single-partner sex. The most common reasons for not waiting, for both males and females, was comfort with their decision and "not wanting to say no" (females, 18 of 41, 43.9% and males, six of 16, 37.5%) and being in love with their partners (females 14 of 41, 34.1%, and males five of 16, 31.3%).

We also addressed the issues of family and religious prohibitions; neither one held much influence with the teens in this study. Interestingly, for both males and females, religious mores against premarital sex carried more weight than those posed by family.

Our data indicated that 20 of 35 females (57%) said they would have sex even if their religion was against it, but 27 of 35 (77%) said they would even if their family said no. The males responded with eight of 11 (72.7%) stating they would have sex even if their religion said no, whereas 10 of 11 (90.9%) said they would have sex even if family said no.

There is a final result that needs attention. Many studies have shown that teens have sex as a result of "pressure," in particular, peer pressure. Our results did not support these other studies. Our data conclude that 10 of 38 (26.3%) females said they had sex as a result of pressure. None of the females indicated it came from peers; nine times out of 10 that pressure came from their boyfriends, and one time from family members. Of the males, five of 10 (50%) admitted to having sex as a result of pressure, but two of these five (40%) indicated that this pressure came from within themselves. One respondent (20%) claimed to have succumbed to pressure from peers, and one each to pressure from a girlfriend or family member.

Discussion

Our results confirm, for the most part, those of other studies. It is clear that adolescents are becoming sexually active at early ages. We must now look for the reasons for this and what the consequences are. These teens know the risks they are taking, they respect those who wait, yet as a group they do not wait. Why? As Howard[9] has already shown, knowledge about the harmful effects of early sexual activity may not be sufficient to help teens guide their behavior. It is as if they do not associate acts with consequences, or more likely, that they do not associate things they do with consequences that they might have to face. Adolescents, like adults, follow the "it won't happen to me" approach to life. Kenney[5] refers to this as their "sense of invulnerabiltiy." They do not conceptualize that undesirable things could actually happen to themselves. This leaves them open to engage in risk-taking behavior.

In Piaget's terms adolescents as a whole have just begun to think on a formal operational level, the most crucial element of which is the ability to think abstractly. Many may not reach this level, and thus many of our adolescents do not have the ability to think abstractly; they do not therefore, have the capacity to think actively and rationally about and to plan for the future. The do not consider not having sex for fear of pregnancy or STDs because the sexual act is in the here and now, on a concrete level which they can understand. The pregnancy and STDs are down the road, at an abstract level they cannot fully comprehend. Kenney[5] refers to this teenage thinking pattern as "orientation to the present."

Seen in this context it is easy to understand why knowledge of the consequences of early sex does not deter teens from engaging in sex. However, it does not tell us what is pushing teens to have sex in the first place. Many studies have cited the strong influence of peer pressure as a casual factor leading teens to have sex. Our results did not corroborate these findings and while this may result from the small size of our study group, we believe that the presently assumed importance of peer pressure needs further study. Pointing to the peer group does not explain moreover, where those in the group, as individuals, picked up the desire to have sex at an early age. We believe that this desire, rather than motivated externally by peers, is in fact motivated internally by the adolescent quest for identity. Erikson has written that identity consolidation is one of the primary tasks of adolescence. This means identity in relation to family, work, peers, ideals, plans for the future, and sexuality. It is work that the unconscious mind struggles with for a lifetime, a task that especially engages the individual in adolescence.

There is one component, however, that may be defined more easily than the others, because sex is more than an act. It is a way of establishing oneself as a sexual being. This is not to say that after his or her first sexual act a teen will stop struggling with the issue of sexual identity, but rather that early sex helps to establish sexual identity and helps to consolidate it. In a world where so many other aspects of identity are unclear it might indeed be a comfort to have a part of one component somewhat firmly established.

This "comfort" comes at a price, the price of self-esteem. Alexander[12] notes that the psychological consequences of early intercourse include; "self-devaluation, feelings of being objectified or used, and loss of self-esteem."

Marsh[6] adds that those teens who become sexually active, usually teens who have low self-esteem already, "often feel worse about themselves after they have sex than they did before." We add to this the guilt that they feel as a result of violating familial and religious mores, which most of them said they would do, and we now have an established vicious cycle. Teens with low self-esteem have early sex, on our hypothesis to consolidate their sexual identities and raise their esteem, only to suffer a lower self-esteem which they then will carry with them into adulthood.

What can be done? Abstinence is one answer, a viable answer that deserves more attention and support. Teens can learn to understand themselves better and become better choice makers by not engaging in early sexual activity. They can learn to respect themselves for waiting just as our results show that most teens respect those who wait, and admire them. This can then build their egos while at the same time leading them to avoid the trap of low self-esteem. However, abstinence counseling must be approached carefully as pointed out by Kenney.[5] If done incorrectly and without sensitivity the message that it is all right to wait can seem alien and punitive. If done correctly, by focusing on the personal choice involved, it can be empowering and ego building, and can in fact become a lifelong source of strength. We owe it to our teenagers, and in the long run to ourselves, to see that in our work with them this source of strength is not overlooked.

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Important Advances in Clinical Medicine

Neurosurgery

The Scientific Board of the California Medical Association presents the following inventory of items of progress in neurosurgery. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in neurosurgery that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Neurosurgery of the California Medical Association, and the summaries were prepared under its direction.

Brachial Plexus Birth Injury

THE first experiences with brachial plexus exploration in the infant were reported 85 years ago, in which gratifying functional recoveries occurred after the direct suture of ruptured upper plexus elements. Because surgical and anesthetic techniques were relatively primitive, only a few surgeons achieved consistent, satisfactory results, and by the mid-1920s, surgical attention had shifted from the reanimation of paralyzed muscle groups to mitigating the skeletal consequences of paralysis, contracture, and joint deformity.

Two major developments have revived the practice of brachial plexus exploration for infants with birth injuries. The first is a refinement of the peripheral nerve microsurgical procedures and pediatric anesthesia that has made long procedures to reconstruct miniature infant brachial plexuses both feasible and safe. The second is a recent clarification of the natural history of plexus birth injury that has shed invaluable light on the process of patient selection.

Between 75% and 95% of newborns with brachial plexus palsies will make complete, spontaneous recoveries. Identifying the minority who are destined to a degree of functional disability that might justify surgical intervention has been problematic. Initial flaccidity of the entire limb without any movements of the fingers or wrist has long been recognized as an adverse prognostic sign, as has the presence of Horner's syndrome. In the late 1970s the precision of early prognostication was advanced when the rates of recovery in a cohort of conservatively managed neonates were prospectively examined. Observations were distilled into the following succinct clinical rule: If perceptible muscle contractions have not returned to the deltoid and the biceps by the end of the third month, the ultimate functional recovery of the shoulder and the arm will be unsatisfactory.

This rule, which has been corroborated by several subsequent investigations, has encouraged the application of modern peripheral nerve microsurgical techniques to brachial plexus birth injuries. The most practical goal has been to reanimate the muscles supplied by the upper trunk: the abductors and external rotators of the shoulder and the flexors of the elbow. The most common pattern of injury, neuromata involving the C-5 and C-6 spinal nerves and the upper trunk, has been managed by excision and reconstruction with sural nerve grafts. In less common cases, when the C-5 and C-6 nerves have not been suitable for reconstruction because of intraforaminal injuries or a vulsion from the spinal cord, distal upper plexus elements have been neurotized by using the intercostal nerves, the spinal accessory nerve, and other sources of motor outflow.

Surgical groups from Europe, Scandinavia, and the United States have reported gratifying clinical results. The largest experience has been 178 surgical cases reported from Paris. On the basis of previous natural history data, the researchers explored the plexuses of infants shortly after 3 months of age if there was no sign of recovery in the deltoid and biceps muscles by that point. Although brachial plexus reconstruction does not produce normal limbs, long-term results indicate that operative intervention generally improves on the natural history by one clinical grade. Morbidity has been minimal. Whether plexus exploration is of benefit in older infants and children is not clear.

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Even under the best of circumstances, in the two-or three-year interval required for the results of plexus reconstruction to become apparent, infants may need the services of a developmental pediatrician, a physiatrist, an orthopedic surgeon, and physical and occupational therapists. The neurosurgical management of plexus injury should be one part of a comprehensive program, and a prototypic multidisciplinary clinic has been described.

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Endovascular Therapy for Intracranial Vascular Lesions

RECENT reports have suggested that various cerebrovascular lesions including intracranial aneurysms, vascular malformations, and vasospasm following subarachnoid hemorrhage can be treated successfully with interventional neuroradiologic techniques. Patients undergoing such endovascular therapy are often considered to be poor surgical risks or those in whom conventional neurosurgical techniques have failed. These endovascular methods usually employ a transfemoral approach using local anesthesia and mild sedation. Intravascular catheters are guided into the intracranial circulation under direct fluoroscopic control. Detachable balloons may be placed in aneurysms or proximal vessels; various particles, thrombogenic coils, or glue may be injected into vascular malformations; or cerebral arteries narrowed by vasospasm may be dilated with microballoons. At present, these relatively new techniques have potential advantages but some limitations.

For difficult intracranial aneurysms, or for patients in poor medical or neurologic conditions, endovascular balloon occlusion of an aneurysm or feeding artery offers several benefits: an open craniotomy with general anesthesia and brain retraction is avoided; the patient's neurologic condition can be continually monitored during the procedure, and if the test occlusion is not tolerated, the balloon can be deflated; and an immediate, high-quality angiogram can be done following the balloon placement to verify the completeness of the occlusion and the patency of normal vessels. Serious pitfalls include immediate or delayed aneusysmal rupture due to subtotal occlusion and incomplete aneurysmal thrombosis; balloon rupture or balloon migration leading to hemorrhage or ischemic complications, especially in giant aneurysms wherein more than one balloon is required; persistent mass effect of the inflated balloons, even after aneursymal thrombosis, and occlusion of the origins of perforators that are not angiographically visualized. Long-term follow-up in patients undergoing these procedures is still being conducted. Further research to find a safer endovascular therapy for difficult aneurysms is clearly warranted, and we are currently investigating the use of retrievable thrombogenic coils.

Endovascular embolization of intracranial vascular malformations is proving to be extremely valuable, usually as an adjunct to conventional microsurgical or radiosurgical procedures. Advantages include awake monitoring of patients with test injections of amobarbital sodium before definitive embolization; the ability to obliterate deep feeders or components of arteriovenous malformations (AVMs) that are surgically difficult; and the ability to stage the obliteration of large malformations, potentially allowing for the gradual return to normal of markedly altered hemodynamics. For large AVMs, we have recently been using embolization to reduce the nidus size before a radiosurgical procedure in an attempt to increase the obliteration rate and decrease the incidence of complications. In 45 patients receiving this combined therapy, the results are encouraging, although long-term follow-up is still needed. In select cases, such as carotid-cavernous fistulas, dural AVMs, vein of Galen aneurysms, and occasional parenchymal AVMs, endovascular treatment results in complete angiographic obliteration of the lesion. Limitations include the risk of inducing hemorrhage or infarction, either immediate or delayed; the small incidence of venous sinus thrombosis if a transvenous approach is used; and the possibility of AVM recanalization if the malformation is not removed. It is rare to obliterate completely a parenchymal AVM with endovascular treatment alone.

Balloon angioplasty for symptomatic vasospasm following subarachnoid hemorrhage is being attempted in specialized neurosurgical centers. Because delayed ischemic deterioration from vasospasm is still a major problem despite the use of hypervolemic, hypertensive therapy and systemic calcium antagonists, balloon angioplasty could have substantial therapeutic potential. Problems associated with the method include aneurysmal rupture if its neck has not been secured; a failure to improve the neurologic condition if unrecognized infarction has already occurred; the risk of inducing hemorrhage in an infarcted territory; and difficulty gaining access to the narrowest (often most symptomatic) arteries, smaller arterial branches, and perforators. The long-term side effects of intracranial angioplasty are also not known.

Endovascular therapy for cerebrovascular disorders has already made a major positive contribution. At present it still has certain limitations and does not replace open microsurgical techniques for patients in good condition with accessible lesions. With further technical advances and improvements in patient selection criteria, its role will undoubtedly be expanded and become better defined.

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Implanting Fetal Tissue to Treat Parkinson's Disease

THE concept of restoring neurologic function by transplanting neural tissue is old. A clear demonstration of its feasibility, however, came in 1979 with the publication of two important studies. In both, the researchers partially reversed the behavioral abnormalities seen in rats with pharmacologically induced nigrostriatal lesions by transplanting fetal tissue into the brain. The clinical implications for Parkinson's disease are clear. The motor disturbances seen in patients with Parkinson's disease primarily result from the loss of dopaminergic neurons in the pars compacta of the substantia nigra. These neurons project to the striatum where the release of dopamine from synaptic vesicles modulates motor function. The systemic delivery of levodopa dramatically improves function in these patients, but the results are far from ideal. The local production of dopamine in the striatum by transplanted tissue holds the promise of even greater clinical improvement.

In the initial attempts at transplantation in humans, autologous adrenal tissue was used as the source for dopamine. At best, the results have been limited and transient. The mechanism underlying the observed improvements is not known, but autopsy studies and research in animals strongly suggest that the release of catecholamines by viable graft cells is not a factor. The bulk of the data obtained from studies of animals over the past ten years indicates that fetal brain tissue is superior to adrenal tissue for this purpose. In 1987 a Scandinavian team did the first implantation of fetal mesencephalic cells into the human striatum. Perhaps as many as 100 similar procedures have been performed throughout the world to date, although documentation in the English-language literature has been scarce. Eight fetal cell implantations have been done in this country. The first of these has been described in detail: that one patient has shown considerable improvement in motor function, sustained at one year. The degree of improvement mirrors that seen with the third patient in the Scandinavian series, as reported recently in *Science*. Positron emission tomographic scans using G-L-[^{18}F]fluorodopa in these patients suggest that viable graft cells are producing dopamine within the striatum.

Neural transplantation is in its infancy. The optimal age at which the embryonic tissue should be harvested is reasonably clear, but the method of delivery, the number of cells implanted, the exact target within the striatum, unilateral versus bilateral transplants, the immunologic factors at play, and the use of growth factors are but some of the issues that still need to be more thoroughly addressed. We are clearly on the verge of a new era in which the restoration of function within the central nervous system will be commonplace.

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Endoscopic Neurosurgery

IMAGE-DIRECTED stereotactic methods have enabled the safe and precise placement of endoscopes into the brain. The miniaturization of endoscopic instruments has enabled the development of smaller-diameter endoscopes, which minimizes the disruption of normal brain in approaching deep lesions. Miniaturization and technical improvements have occurred in optics (rigid as well as fiberoptic systems), operating instruments (rigid and flexible microforceps), continuous suction and irrigation systems, and fiber systems for delivering laser energy. In addition, intraoperative ultrasonography through a burr hole allows real-time monitoring of intracranial contents.

Endoscopic systems have now been used in numerous situations with relatively low complication rates, including the aspiration of colloid cysts of the third ventricle, biopsy and resection of cystic and intraventricular tumors, the evacuation of intracerebral hematomas, and a terminal-third ventriculostomy through a foramen of Monroe for hydrocephalus in patients with aqueductal stenosis or pineal region tumors.

A recent series reported on 109 endoscopic procedures for the evacuation of hematomas and 24 for biopsy and subtotal resection of a variety of intracranial tumors. Surgical morbidity was approximately 4% in the patients with intracranial hemorrhage and negligible in the patients with tumors.

Whether the endoscopic treatment of such lesions can be more effective than conventional management remains to be demonstrated, but certainly such procedures can be carried out with a high degree of safety due to the precision of localizing techniques and minimal invasiveness of the endoscopic instruments.

With advances in endoscopic technology, surgical instrumentation, and energy delivery (laser), endoscopic neurosurgical techniques may become increasingly important in the management of a variety of intracranial disorders.

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Indications for Stabilization in the Management of Lumbar Disc Disease

THE diagnosis of mechanical instability of the lumbar spine is difficult to make with certainty and frequently is a diagnosis of exclusion. Practitioners caring for patients with degenerative lumbar disc disease must never forget the anatomy of the back, the important stabilizing role of the ligaments, facet joints, facet capsules, and musculature, and the important anatomic relationship of the disc to the intervertebral foramina. Any patient who has had a previous back operation, especially for the removal of a degenerative disc, may have instability at the operative level. This is especially true at the L4-5 level, which is the most mobile of the lumbar spine. A number of patients in whom the "failed back syndrome" develops after disc excision are suffering from excessive mobility at a motion segment(s) and will benefit from a stabilization procedure; the trick is to identify those patients in whom further surgical intervention is likely to be beneficial.

Most patients who have mechanical instability of the spine will have both back and leg pain, but the back pain is predominant. On physical examination, they will have impressive muscle spasm of the paravertebral musculature and be unwilling to move the back except with flexion at the hips. Plain lumbar spine films in flexion and extension may show excessive movement of the injured motion segment(s), there may be evidence of pseudospondylolisthesis, and unexpected iatrogenic pars and facet fractures are not infrequently identified. Magnetic resonance imaging or myelography usually is not impressively abnormal; there may be residual scarring or mild disc bulging, but in most of these patients large structural lesions are absent. The best preoperative predictor of whether a particular patient will benefit from a fusion is the response to a trial immobilization in an acrylic body jacket. This jacket cannot be removed and is left on for four to six weeks. Patients who will benefit from fusion are able to reduce substantially their requirement for medication, often become pain-free in the jacket, and will have fairly prompt recurrence of significant back pain when the jacket is removed and replaced with a rigid but removable brace.

A fusion operation can be accomplished by a number of techniques with and without instrumentation and with both anterior and posterior approaches. The basic key to obtaining a solid fusion is bone bridging across the area of motion. Instrumented fusions without adequate bone or proper attention to preparing the fusion bed will ultimately fail because the initial stability provided by the instrumentation is lost as the metal parts loosen with continued motion over time.

Because spinal fusion for patients with the failed-back syndrome carries no guarantee that symptoms will be ameliorated, patients should be considered as candidates for this procedure only after conservative measures of pain control have been completely exhausted. In addition, patients who are overweight should lose excess weight and participate in a spine muscle strengthening and flexibility program before being considered as candidates for a fusion procedure. In a certain number of well-motivated patients, dedicated efforts directed at weight control, muscle strengthening, and maintenance of proper spinal alignment and body mechanics can obviate the need for a large surgical procedure. In the right patients, however, a fusion procedure for mechanical instability of the lumbar spine can make the difference between disability and a meaningful life.

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Implantable Neurosurgical Drug Delivery Systems

IMPLANTABLE neurosurgical devices provide an elegant and novel means of delivering drugs to the central nervous system. They have had increasing applications in the management of intractable pain, certain neurologic disorders, and malignant lesions and infection of the central nervous system.

The epidural, subarachnoid, or intraventricular administration of medication represents an effective approach to the delivery of drugs to a specific site within the central nervous system. This approach provides for a controlled, direct, and precise delivery of drugs. The identification of opiate receptors in the central nervous system stimulated the development of a method assuring the direct delivery of synthetic and semisynthetic opioids to the brain and spinal cord. By circumventing the blood-brain barrier, smaller dosages of medication are feasible and systemic side effects are minimized.

Implantable devices consisting of reservoirs and pumps are gaining increasing favor in neurosurgical practice. The surgical implantation of such devices is reasonably safe and easy. Catheters are placed in either the spinal epidural space or the subarachnoid space through a small twist-drill hole. These catheters are then tunneled subcutaneously and connected to an infusion pump that is placed in a subcutaneous pocket, generally in the abdomen, flank, or chest. Such a closed system provides the advantages of long-term, controlled, sustained delivery of medication with minimal inconvenience and risk of infection.

Rapid technologic advances have provided sophisticated delivery systems. Large reservoirs filled percutaneously and placed remote from the delivery sites permit conveniently long intervals between drug refills, thereby minimizing the risk of infection, discomfort, and other complications. Remote programmable pumps permit changes in drug dosage by telemetry.

The use of such systems has seen increasing acceptance in the treatment of intractable cancer pain, otherwise difficult to control by oral or parenteral medication. Lumbar or cervical spinal catheter placement is used for the treatment of truncal pain. The intraventricular administration of opioids is effective for head and neck pain. The use of such opioid drug delivery systems for chronic pain of benign origin has been attempted in certain centers, but such application remains controversial. Furthermore, because these systems are expensive, they probably are not justified for short-term use.

Similar drug delivery systems have been used to good advantage in the treatment of malignant tumors and infections of the central nervous system. The intrathecal administration of baclofen for spasticity has received recent attention. Other neurologic disorders undoubtedly will be treated in a similar manner.

The long-term use of implantable drug delivery systems can result in a number of complications. Blocked or migrating catheters and pump failure are easily recognized and generally readily corrected. The development of drug tolerance is a more serious problem. Although this often represents a "pseudotolerance" resulting from a mechanical system failure, such tolerance to opioid medications may occur with long-term use. Generally drug tolerance develops more slowly with continuous spinal infusion than with bolus administration. The problem may be overcome initially by increasing the concentration or substituting another opioid. In intractable cases, however, narcotic detoxification may be necessary.

The direct delivery of medication to the central nervous system using implantable devices assures a controlled, sustained, convenient, and long-term administration of effective medication without compromising normal neurologic function and with minimal systemic side effects. This method should not be construed as a panacea. Proper patient selection is essential. Advancing technology offers an exciting prospect for benefiting future generations of patients through neurosurgical care.

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Interstitial Radiotherapy for Malignant Glioma

CURRENT therapy for malignant glioma consisting of surgical resection, external-beam radiotherapy, and carmustine (BCNU) chemotherapy can prolong survival, but the overall prognosis remains poor. Most patients have significant tumor progression within the first two years after their initial treatment.

While the efficacy of external-beam radiotherapy in controlling residual tumor following surgical resection has been well established, increasing doses of radiation are associated with increasing toxicity to the surrounding brain. One strategy to deliver additional radiotherapy to the tumor has been to give a "boost" of radiation by implanting radioactive sources into the tumor bed. The theoretic advantages of such "seed implants" include a relatively high overall dose of radiation to the tumor with relatively low exposure to surrounding brain. Another possible advantage of temporary implant is the delivery of constant low-rate radiation that may enhance biologic effects on malignant cells.

During the past decade, the development of image-directed stereotactic systems has resulted in the ability to treat tumor volumes with radioactive sources (iodine 125 or iridium 192) with a high degree of accuracy and safety. Results from early trials of interstitial radiotherapy in selected patients have been encouraging, with quality survival as long as five years in a number of patients. Many neurosurgical centers are currently using this approach to treat malignant brain tumors (primary as well as metastatic) in conjunction with external-beam radiotherapy. Several groups have reported benefits of such treatment when compared with historical controls, but such effects in controlled studies remain to be quantified. Complication rates, both short and long term, also need to be better defined. Preliminary data suggest that short-term morbidity is less than 5%, but a number of patients require subsequent operation for recurrent masses. Posttreatment masses may include large volumes of necrotic tissue thought to result from the radiation implants. Because this is a relatively new form of treatment, long-term efficacy and complication rates also require further definition.

To summarize, interstitial radiotherapy is a logical adjuvant therapy in the management of malignant brain tumors. Initial data suggest efficacy in selected patients. Whether such therapy will become the standard of care will depend on the results of ongoing phase III investigations such as those of the Brain Tumor Cooperative Group. Randomized, controlled studies such as those of the Brain Tumor Cooperative Group hold the promise that the indications for and efficacy of interstitial radiotherapy will be determined.

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Management of Prolactin-Secreting Pituitary Adenomas

PROLACTIN-SECRETING adenomas are the most common functioning pituitary tumors that present to clinicians. The successful integration of medical and surgical therapy provides an extremely high potential for the effective treatment of such tumors in terms of resolving endocrine symptoms and intracranial mass effects.

The medical treatment of prolactin-secreting pituitary tumors is based on the physiology of prolactin release—prolactin being the only hormone of the anterior pituitary to be regulated exclusively by a mechanism of tonic inhibition effected by neurotransmitter release from the hypothalamus. The neurotransmitter regulating the release of prolactin has dopaminergic characteristics, but whether it is dopamine is unknown. Bromocriptine, an ergot derivative with dopaminergic characteristics, effectively suppresses prolactin secretion and restores prolactin levels to normal in greater than 95% of patients with prolactin-secreting adenomas. It also significantly reduces the size of large prolactin-secreting tumors in at least 50% of patients and usually precludes further tumor growth once therapy is instituted. Bromocriptine therapy represents an acceptable alternative to surgical therapy, but the drug is not curative and not all patients tolerate its use. Furthermore, cessation of the drug results in a rapid return of hyperprolactinemia and the tumor reverts to at least its original size. Therefore, bromocriptine therapy is required for the lifetime of a patient when used alone.

Approaches to treatment involve a consideration of the stage of the tumor. Stage I lesions (less than 1 cm in diameter and confined to the intradural sella) are most amenable to surgical cure. The main indication for the treatment of such small lesions is patients' desire for pregnancy. The possible genesis of premature osteoporosis in women who are amenorrheic and hypoestrogenemic as a consequence of systemic hyperprolactinemia is a hypothetical concern that awaits clinical confirmation. In our experience, surgical resection of stage I lesions has an 84%

chemical cure rate a year after resection, with morbidity less than 1% and mortality 0%. Serum prolactin levels measured six weeks postoperatively are used to determine whether further intervention is necessary. Bromocriptine therapy, on the other hand, restores normal serum prolactin levels in virtually 100% of patients who tolerate the drug, thus allowing normal pregnancy. Care must be taken with this approach, however, because tumor regrowth may necessitate reinstituting bromocriptine therapy during pregnancy. For stage I lesions, therefore, either surgical resection or bromocriptine therapy can effectively maximize the potential for pregnancy. The choice of therapy should depend on the patient's preference, taking into account the need for long-term medical management should an operation be deferred.

Stage II tumors (greater than 1 cm in size, with or without supraseller extension but without invasion of the dura or bone of the sella turcica) present similar treatment options, although the chemical cure rate of surgical treatment is only 50%, compared with 90% with bromocriptine use. Some stage II tumors, such as those that are cystic or of low density on a computed tomographic scan, generally do not shrink with bromocriptine therapy. This underlines the advantage of surgical resection in such cases—the reduction of tumor size.

Stage III tumors (local invasion of dura and sella) and stage IV tumors (diffuse sellar invasion with or without extension into the anterior, middle, or posterior fossa) defy cure by any single means. Surgical therapy alone achieves only a 25% physiologic cure of stage III lesions, and the physiologic cure of stage IV lesions approaches 0%. On the other hand, high doses of bromocriptine, with resulting increases in side effects, are required to have an effect on such large tumors. Therefore, we use combined therapy in stage III and IV tumors. The patient is initially placed on regimen of increasing bromocriptine doses until a serum prolactin level of less than 20 ng pr ml is established. If, after six weeks of normal prolactin levels, no reduction in tumor mass is observed on serial imaging studies, surgical resection is attempted. Imaging studies are done at three and nine months postoperatively and yearly thereafter. If postoperative imaging fails to show tumor progression and the prolactin level remains normal, no radiation therapy is given. Should the tumor progress despite bromocriptine therapy, radiation therapy is usually given. One indication for more urgent surgical intervention is progressive visual compromise despite bromocriptine therapy. Should significant reductions in tumor size be achieved with bromocriptine use, continued medical management becomes an option. In this case, yearly follow-up imaging studies are done to assess tumor status.

In summary, no single therapeutic modality is either ideal or unacceptable in the management of prolactin-secreting pituitary tumors. Fortunately, stage I and II tumors lend themselves to surgical cure, which avoids the need for a lifelong commitment to a medical regimen. The role of bromocriptine therapy adds a useful alternative to surgical intervention in some patients and also plays a crucial role in the combined management of more invasive lesions. The net result of this complementary set of therapeutic options is the reduction or elimination of tumor mass and the restoration of normal endocrine function.

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Surgical Treatment of Petroclival Meningiomas

THERE has been a dramatically increased interest in more aggressive surgical treatment of tumors at the base of the skull. New approaches are being developed, and old ones are being revitalized. Because of the complexity of the anatomy at the skull base, surgical approaches to this region are now frequently multidisciplinary, involving most often a neurosurgeon and an otolaryngologist. The team approach has provided tumor management that is more powerful than the sum of its parts, and nowhere is this more apparent than in the surgical treatment of meningiomas of the petrous bone and clivus, histologically benign lesions rendered malignant solely because of their relative surgical inaccessibility.

Petroclival meningiomas have been resected most commonly by the suboccipital (posterior fossa) retromastoid approach, and for most lesions this has been adequate. Surgical access to more complex lesions, however, such as those that extend to the prepontine cistern, middle fossa, or craniovertebral junction, require novel techniques often involving removing portions of the cranial base. Modern thinking stresses an approach that, while fundamentally a posterior fossa craniotomy, is different in that the sigmoid sinus is no longer the lateral limit to bone removal, such that a more direct line of vision along the petrous bone and in front of the cerebellum to the petrous apex and clivus is available to microsurgeons. This "petrosal" approach is now possible because the neurosurgery-neuro-otology team is not reluctant to drill anteriorly into the temporal bone.

There are three types of transpetrosal posterior fossa craniotomy: retrolabyrinthine, translabyrinthine, and transcochlear. In the retrolabyrinthine approach, bone removal anterior to the sigmoid sinus is halted at the level of semicircular canals. Although this approach spares auditory function, it affords only a slightly improved access to the posterior fossa. In the translabyrinthine procedure, anterosigmoid bone is removed to the level of the internal auditory canal. This provides excellent visualization of the lateral aspect of the pons and upper medulla with only minimal retraction of the cerebellar hemisphere. Because the semicircular canals are removed, unilateral hearing loss is inevitable. In the transcochlear approach, the entire otic capsule is removed along with the middle ear and external auditory canal. By anteriorly rerouting the facial nerve from its intratemporal canal and then resecting both the petrous apex and lateral aspect of the clivus, an unimpeded view of the ventral aspect of the pons and clivus is obtained without the need for brain retraction. Hearing loss and transient facial palsy are acceptable deficits only with an otherwise inaccessible and potentially lethal tumor.

For tumors that arise high on the petrous bone and clivus, surgeons are adding a low temporal craniotomy to the petrosal approach with ligation of either the transverse or, more frequently, the superior petrosal sinus to allow splitting of the tentorium for additional superior exposure through the supratentorial space. For lesions arising from or extending to the low clivus or anterior rim of the foramen magnum, the lateral accentuation of the approach angle is gained by isolating and protecting the vertebral artery and drilling off the lateral aspect of the foramen magnum and occipital condyle. Because the sigmoid sinus sweeps anterosuperiorly at this level, drilling can be safely carried forward all the way to the hypoglossal canal. For these same low clival or anterior foramen magnum meningiomas, some surgeons are attempting an anterior (transoral, transclival) approach. Despite the development of fibrin glues for dural repair, however, the specter of postoperative cerebrospinal fluid leak into the oropharynx makes most surgeons reluctant to remove intradural lesions by this route.

Certain petroclival meningiomas will not be completely resectable despite the aforementioned advances in surgical access. For them, external radiation therapy, brachytherapy, and radiosurgery will be useful treatment adjuncts.

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Intraoperative Digital Subtraction Angiography for Neurosurgery

HIGH-RESOLUTION, real-time, digital subtraction angiography (DSA) facilitates the intraoperative management of complex intracranial vascular disorders. Portable DSA equipment is now available that provides angiographic images virtually equivalent to conventional angiography. A mobile "C" arm fluoroscopy unit with high-resolution video is fitted with frame-averaging, catheter road mapping and automatic peak opacification capability. These features reduce the volume of contrast material necessary for adequate images. The system is powered by standard 115-volt, 20-ampere lines and requires no special shielding. The software package can be modified to allow for stereoscopic visualization of intracranial vascular lesions. Angiographic pictures accrue immediately, with the advantage of overlying bony and relatively radiopaque instrument subtraction. Carbon-fiber head holders can be subtracted, but ordinary metal instruments cannot. Draping, scalp hemostasis, and retraction require modification to avoid metallic artifacts. Technical considerations involved in intraoperative transfemoral or direct arterial catheterization have been described.

Indications for intraoperative neurosurgical DSA are diagnostic, therapeutic ("interventional"), or a combination of both. The obvious benefit of immediate intraoperative angiographic information is the ability to promptly and precisely improve therapeutic maneuvers. Arteriovenous malformations and fistulas, complex aneurysms, arterial occlusive disease, and hemorrhage localization compose the majority of lesions studied intraoperatively with DSA. The procedure does prolong operative time, so use is ordinarily reserved for more difficult intracranial vascular procedures. The incidence of technical surgical problems diagnosed by intraoperative angiography is significant. In one series, 7 of 32 procedures required intraoperative modification and in another series, 7 of 33. These relatively high rates are ascribable to the selection of difficult cases for treatment and study. The principal technical surgical problems detected include incomplete aneurysm clipping or arteriovenous malformation resection and unintentional vessel occlusion. These problems were corrected intraoperatively and confirmed by DSA. There have been no reports of major complications of DSA when the indications are clearly for diagnostic purposes.

Intraoperative DSA affords new options for treating inaccessible vascular lesions. Neurosurgeons can expose vessels otherwise inaccessible by catheter for the purpose of embolization, balloon occlusion, or angioplasty with the advantage of an immediate determination of the efficacy of the procedure. The progressively improving imaging capability of DSA, coupled with the mutual interests of neurosurgeons and neuroradiologists, is clearly resulting in an improved outcome for patients with difficult and challenging intracranial vascular disorders.

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Irritable Children

ACUTE irritability in a child is commonly due to an infection such as an upper or lower respiratory tract infection or gastroenteritis; a gastrointestinal disorder, such as a milk allergy or intolerance, appendicitis, intussusception or hernia; or trauma, especially inapparent fractures. Fever, dehydration, decreased food intake, pain, or sleep disturbances frequently worsen the degree of irritability. Chronic irritability may be due to a much broader range of pediatric illnesses that encompass chronic infection; endocrine and renal diseases; anemia, leukemia, and other such disorders; colic; parenting problems; neglect; abuse; and substance or toxin exposure. An overview of the common medical, surgical, and orthopedic causes of irritability is provided in several of the standard textbooks on pediatrics and critical care.

Emergency department physicians, family practitioners, or pediatricians, however, are confronted with other situations in which a child is irritable, yet no apparent reason can be determined. It is important, then, to realize that approximately 35% of children are seen in emergency departments because of neurologic problems. By considering the following, the need for further timely neurosurgical or neurologic consultation can be decided.

In general, a suspicion of central nervous system infection warrants an immediate evaluation that includes a lumbar puncture and, depending on the severity of symptoms, computed tomographic (CT) or magnetic resonance imaging (MRI) scanning and early antibiotic treatment. An irritable infant with a tense fontanel could have a subdural effusion, empyema, acute hydrocephalus, cerebral edema, or abscess, all of which require early and different neurologic and neurosurgical treatments.

Nonaccidental trauma from the shaking of infants is a frequent cause of unexplained irritability. A careful examination by a neurologist or neurosurgeon can detect retinal or subhyaloid hemorrhages, nuchal rigidity, hyperreflexia, and corticospinal tract involvement signaling the need for further diagnostic tests such as CT or MRI scanning and lumbar puncture. In a patient with multiple trauma with limited or no initial central nervous system symptoms, the later occurrence of irritability may not be related to systemic injury and pain. An evaluation to rule out an epidural, subdural, or subarachnoid hemorrhage should be considered. Mastoiditis can also result from a delayed diagnosis of otitis media, and when neurologic symptoms appear, they may be due to septic thrombosis of the transverse sinus.

In an irritable infant or child, signs of increased intracranial pressure such a papilledema, ophthalmoplegia, or abnormal pupillary reflexes are difficult for most physicians to assess, yet may be critical in establishing a specific diagnosis and deciding on the type of scan—CT versus MRI—to do to yield the maximal information for the most reasonable cost and safety to the patient. As greater efforts are made to contain the costs of hospital care, consultation by a neurosurgeon or neurologist in such emergency situations may obviate the need for unnecessary studies and direct the evaluation toward the most timely study with the most useful information.

Irritability alternating with lethargy is a common postictal or toxic-metabolic manifestation in children. This may be due to either acute seizure activity or medication side effects, such as phenobarbital or primidone, in a child with a seizure disorder. Determining anticonvulsant drug levels and obtaining an electroencephalogram, a urine toxicology screen, and a consultation may clarify the cause of a child's irritability.

Symptoms such as head tilt, diplopia, or vomiting are associated with tumors of the nervous system, which are the most common form of solid neoplasms of infancy and childhood. Wryneck may also be a sign of atlantoaxial rotary subluxation. Nuchal rigidity without fever may be caused by subarachnoid hemorrhage from a small arteriovenous malformation that has ruptured. If the child is known to have a preexisting neurosurgical disorder, the general practitioner or pediatrician should still proceed with an organized workup and obtain consultation, especially if actual manipulation or tapping of a shunt is indicated. Measuring the child's head circumference and plotting trends on appropriate charts provide useful and complementary information to that obtained from radiographic studies.

By addressing these issues, primary care physicians can then make a reasonable decision as to whether specialty consultation may be warranted for further evaluation and management. There are also several excellent reference sources available.

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Surgical Treatment of Spasticity

In recent years new surgical techniques have been developed that are effective in alleviating spasticity in selected patients. A decade ago, selective dorsal rhizotomy was reported to be effective in alleviating spasticity in children with cerebral palsy; the procedure has since been modified. This neurosurgical operation reduces spasticity by cutting selected posterior nerve rootlets on the basis of intraoperative electrical stimulation and electromyographic recordings. In recent years, interest in this procedure has grown in the United States, and it is being done in several neurosurgical centers across the country. Objective documentation and quantification of the results of this operation as measured by electrophysiologic techniques, physical therapy assessments, and sophisticated gait laboratories are now available.

The procedure is clearly not a panacea for cerebral palsy. It does, however, decrease spasticity, which for some children is a source of major disability. For nonambulatory patients, the operation can increase range of motion; improve sitting, dressing, and positioning; and may lead to gains in functional mobility. For ambulatory patients, it can increase stride length and walking velocity; improve motion about the thighs, knees, and ankles; and ameliorate foot-floor contact. Patients need to be carefully selected with emphasis on ascertaining the clinical importance of obstructive spasticity. Most commonly, cerebral palsy has been the underlying condition, although occasionally patients with spasticity due to myelomeningocele, multiple sclerosis, or head or spinal cord trauma may also benefit.

When chronic pain and spasticity complicate the care of patients with stroke or spinal cord injury, microsurgical lesions at the dorsal root entry zone have been shown to be effective in reducing tone and in alleviating pain.

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Use of High-Dose Glucocorticoids in Acute Head and Spinal Cord Injuries

The efficacy of glucocorticoids in the treatment of acute head and spinal cord injuries has been uncertain. In both instances, experimental work has suggested that these drugs would have a beneficial effect. The results have been mixed, though, when the effect of these drugs has been studied clinically. In patients with acute head injuries, the glucocorticoids appear to reduce mortality but do not improve outcome and do not make the control of intracranial pressure easier. Similarly, with acute spinal cord injuries, no difference in outcome exists between patients treated with standard or those with high-dose methylprednisolone.

The reason that much of the data have been inconclusive has been related to deficiencies in the design of the studies in which the use of glucocorticoids was investigated. These shortcomings in clinical studies have included a reliance on retrospective studies, inadequate controls, unsatisfactory randomization, a failure to blind aspects of studies, a lack of objective evaluation, an insufficient number of patients, and the inclusion of unqualified patients.

Many of these problems in experimental design would seem to have been overcome in the recently completed second National Acute Spinal Cord Injury Study. In this multicenter, randomized, double-blind, and controlled study of 487 patients with acute spinal cord injuries, patients received either methylprednisolone sodium succinate, naloxone hydrochloride, or placebo. Methylprednisolone was administered in the form of a bolus dose of 30 mg per kg given over 15 minutes, followed in 45 minutes by an infusion of 5.4 mg per kg hourly for 23 hours. At six months' follow-up, those patients who had been administered methylprednisolone within eight hours of their injury had a substantial improvement in their neurologic status—motor, superficial pain, and touch sensation—compared with those who had received a placebo. This improvement occurred whether or not patients initially were judged to have either a complete or incomplete spinal cord lesion. The outcome in those patients given naloxone or methylprednisolone more than eight hours after their injury did not differ from that of those who had received a placebo. Major morbidity and mortality were similar in all groups of patients.

The obvious question in light of the demonstrated efficacy of using glucocorticoids in patients with acute spinal cord injuries is whether or not a similar well-designed study is now justified in patients with acute head injuries.

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Warning Leaks and Subarachnoid Hemorrhage

RECENT improvements in outcome after a subarachnoid hemorrhage have been attributed to advances in operative and anesthetic techniques, intensive perioperative care, and the recognition and treatment of secondary effects such as hydrocephalus, fluid-electrolyte disorders, and cerebral vasospasm. As perioperative therapy has improved outcome, perhaps the greatest risk to patients with ruptured intracranial aneurysms is inappropriate diagnosis and their delayed referral following a subarachnoid hemorrhage.

The propensity of ruptured aneurysms to rebleed was well documented in the large cooperative studies of the 1970s and 1980s. Recent prospective studies from Scandinavia have substantiated early rebleeding rates from 13% to 22%, with a high percentage occurring within 24 hours of the initial hemorrhage. These studies confirmed earlier observations that the outcome after rebleeding is considerably worse than after a single hemorrhage. Although magnetic resonance imaging is relatively insensitive to acute hemorrhage, aneurysms of greater than 5 mm are frequently visualized and the presence of methemoglobin in the subarachnoid space may be indicative of a previous subarachnoid hemorrhage. In addition, computed tomographic (CT) infusion may localize aneurysms at the circle of Willis with a high degree of sensitivity.

A subset of patients of particular interest are those manifesting a "warning leak." A significant percentage of patients with subarachnoid hemorrhage will describe a transient event of sufficient severity to seek medical attention within three months preceding a major hemorrhage. The prevalence of warning leaks has been estimated at 28% to 59%; patients in this category generally had a worse overall outcome than persons presenting with their initial subarachnoid bleed. Headache was the most common presenting sign of a warning leak in all series, although oculomotor palsy, seizure, nuchal rigidity, transient neurologic impairment, and nausea have been associated with this syndrome. In a study of the characteristics of warning headaches in subarachnoid hemorrhage, most episodes were of sudden onset, localized, occasionally associated with other symptoms, and usually persisted for several days.

Recently 34 patients with warning leaks of less than four weeks preceding a subarachnoid hemorrhage were among a retrospective series of 87 consecutive patients with ruptured intracranial aneurysm. Headache was nearly uniformly present at the time of the warning leak and was unilateral in 52% of patients with aneurysms arising from the internal carotid artery. The diagnosis was missed in all 17 patients who sought immediate attention. Among 9 patients diagnosed before the second hemorrhage, lumbar puncture (100%) was superior to CT scan (45%) in confirming the diagnosis. In 25 patients without diagnosis, a subarachnoid hemorrhage occurred in less than a week for 56% and overall mortality was 53%. Compared with patients presenting with an initial major hemorrhage or diagnosed before rebleeding, those with an undiagnosed warning leak had worse presenting grades, a worse outcome at three months, and a higher incidence of vasospasm and intracerebral hemorrhage.

These data confirm the ominous significance of the warning leak in the natural history of intracranial aneurysms. A recent onset of severe headache or other symptoms potentially referable to a subarachnoid hemorrhage should be promptly evaluated by CT scan. A normal CT scan should be followed by lumbar puncture and a rapid referral for appropriate therapy if indicated. The widespread recognition of the warning leak represents perhaps the greatest area for potential improvement in the treatment of this disorder.

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Is It Euthanasia or Murder?

DON NOEL

"YOU understand," the doctor at the foot of Dad's bed said, "that if you don't want us to ventilate you"—force air into the lungs with a respirator—"we won't. But once we start, we can't stop. Even if you're brain-dead, we won't be allowed to stop.

"I have to hear it from you. It doesn't matter what your family says"—nodding at us clustererd at his bedside—"because it's your decision."

Mom and Dad long ago signed the Arizona version of living wills. They restated their intentions when he was rushed to the hospital a week ago Saturday night; the charts at the nursing station said clearly, "Do Not Resuscitate." The question of mechanically assisted breathing, however, had not been addressed.

I asked: Might occasion arise when a few hours' ventilation would help Dad through a crisis, and not be needed again? Yes, the doctor said; possible, although not likely. If the machine were used and didn't get Dad through the crisis, however, it could not be turned off.

Dad didn't hesitate. "Don't ventilate," he said. We all nodded somberly.

He survived without a respirator. A mild heart attack damaged an already-weakened heart, but left him with all his faculties. Late last week, he was sent home with a new if uncertain lease on his 84-year-old life.

A blessing, surely, but an episode that raises questions about a sometimes-irrational approach to "heroic measures" to preserve life: Why an all-or-nothing choice that some measures, once initiated, may not be stopped?

Dad probably wouldn't have faced that choice here; Connecticut's "death-with-dignity" law protects doctors and hospitals that agree to discontinue ineffective treatment. Recent case law establishes the right of patients or delegated next-of-kin to insist on pulling the plug—although one might have to change doctors or hospitals.

Some in the General Assembly would like to write new, more restrictive legislation. Rep. William L. Wollenberg, R-Farmington, offered a bill last year to override recent court decisions, but failed to win support.

The question has special poignance for me: This was the second time I've flown to Phoenix, uncertain whether Dad would be alive when I arrived, or if my only role would be to comfort Mom.

The first trip was 16 years ago.

Sixteen years! The measures taken then were truly heroic. Dad had been revived from cardiac arrest by ambulance medics, and twice more at the hospital. Then doctors implanted a pacemaker, a tiny electronic gadget that jolts the heart into activity if the pulse falters.

Within a few months, Dad was in more robust health than he'd enjoyed in years. After four years, the original pacemaker was replaced with a longer-lasting model, 12 years old now and still working—the key element in his survival this time.

For 16 years he's lived a full, active life: gone fishing; gone to Grapefruit League baseball games with other men in his retirement community; used his engineering skills to help the Quaker Meeting in Tempe design a new meetinghouse; celebrated a 60th wedding anniversary with family gathered in his native Montana; and sent a columnist son, from time to time, favorite quotations underscoring the values that are his most important legacy.

The heroic measures taken 16 years ago were deemed, by quirky law, reversible; the machines could have been turned off. A ventilator, if used last week, would have been irrevocably committed to forcing air in and out of his lungs—even had he become, like Nancy Cruzan, a vegetable. We need to think more clearly about life and death.

A friend asked, as I started west: Why had my mother called for the ambulance and emergency technicians? Dad's heart has been failing, a leaking mitral valve. They're reconciled to his going before her. Why not accept death?

The answer is in the 16 years they've enjoyed together

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since the cardiac arrest, and in the weeks or months or years they may yet enjoy after last week's relatively routine hospital measures.

One attempts the miracles modern-day medicine can often perform. If there are to be no miracles, one accepts death—but not without trying.

Yet some—the prevailing view, apparently, in Arizona—would discourage trying; withhold treatment for fear of having to withdraw it.

By what logic? Why should any human being be compelled to reject one dramatic therapy, lest it would prove unsuccessful and he and his spouse of 60 years be consigned to a living hell?

Dad's decision to refuse ventilation turned out to be moot. But what if he had accepted that option, and it proved fruitless?

Had a loving son then pulled the plug, it would have been called euthanasia by some, but murder in Arizona. Not, thank goodness, in Connecticut. Let's keep it that way.

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50 Years Ago

From the *Journal of the Connecticut State Medical Society*

March 1941

THE FORUM

An interesting experimental work is being accomplished by Raab of the medical faculty at the University of Vermont. Working on the theory that angina of effort is caused by a discharge of epinephrine into the blood stream, he has been treating the syndrome with x-radiation to the adrenals. His original series of 100 cases treated in Vienna has already been published in the *Journal of Internal Medicin*e for October 1940. These results were so favorable that he resumed his experiments after he became associated with the University.

With experience and a better selection of cases, the results in a new and unpublished series have been even more impressive. The treatment has been standardized and has been proved relatively harmless. The technique is as follows: All cases that are classified as angina of effort are given a preliminary test by injection of 2 or 3 minims of epinephrine. If the pain appears and one must be prepared to treat the acute symptoms, the case is listed as suitable for treatment by x-radiation. This is given in doses of 200 R to each adrenal on alternate days for six doses or in other words one adrenal is treated daily. There have been no unpleasant side effects even in those cases that had two or three series of treatments. The remote effects are still incompletely known, but have been favorable.

One interesting sidelight of this treatment has been observed. Several of the cases were also suffering from bronchial asthma and following this treatment they had no further difficulty with this condition. The investigators have no explanation for this phenomenon which seems to controvert the known fact that epinephrine does relieve an attack of asthma. More research is being done on this.

A cursory check of the physical findings on approximately 300 of the current crop of draftees reveals two stand-out items: 1—The teeth and gums of these young men are in a bad way and 2—they have a marked vasomotor instability as evidenced by their blood pressure and pulse readings.

The condition of the mouth is important not only because it is a health hazard but also because it reduces the manpower available for training. Almost half of the rejections have been due to this one cause. While it is true enough that the government, because the induction period is limited to one year, will not assume the responsibility for the care of these individuals, the problem still remains with the dental and medical professions.

The vasomotor instability has had little effect on the rejection list except in proven cases of hypertension. However it promises well for the future, as it is a vast reservoir of potential cardiovascular-renal and mental disease. It can well be that army training may stabilize these young men, but the history of the last world war does not confirm that opinion. That this is not a purely local finding has been checked by preliminary reports from other communities, and in some localities the professions are already taking steps toward finding a solution.

Many years ago Luther Burbank wrote "Mental evolution is the reaching of man toward more and more freedom from outside aid and the steady growing toward a better mental and moral fiber from within himself." How important these words seem is never more apparent than after the daily bouts with the "nervous" man, the "nervous" woman and inevitable "nervous" child. Mental hygiene is just beginning to gain a foothold in our scheme of things. When it does come of age it will go a long way toward achieving that goal. T.P.R., M.D.

A Response to Lee Iacocca and Other Health Care Critics

TIMOTHY B. NORBECK

"IN this world nothing is certain but death and taxes," observed Ben Franklin 201 years ago. For American physicians today there is a third certainty: that Lee Iacocca will be whining in some publication, whether it be newspaper or magazine, that Chrysler spends $700 on each automobile for health-related expenses compared to just $200 expended by the Japanese for a comparable car. Facing a loss of one and a half points of market share for 1990 (roughly 200,000 cars and $2 billion in lost revenue), the Chrysler CEO is desperately seeking a scapegoat for this decline. Practically any article on health care costs these days features his complaint, and it is repeated in countless Rotary and Chambers of Commerce meetings throughout America. The implication, of course, is that physicians and our health care system are placing Chrysler and other United States automakers at a disadvantage in world competition for automobile sales. Chairman Lee and his faithful surrogate, Walter Maher, attempt to use this argument in convincing others that national health insurance is the only solution. In fact, Mr. Maher, director of federal relations for Chrysler Corporation, complained in testimony before the Senate Finance Committee earlier this year that health-care expenditures alone give foreign automakers a $300-$500 advantage. "The cost of health care is eroding standards of living and sapping industrial strength," he went on to say. As H. L. Mencken might have replied, " there is something in what you have to say, but not much." According to my calculations, $700 ends up being less than 5% of the cost of one of their average automobiles costing $15,000. These costs are merely one component in a total employee compensation package.

The National Journal, after printing the Chrysler diatribe, concluded that "if we leave medical inflation unchecked for much longer, international competitors will be eating ever bigger chunks of our lunch." What never seems to be mentioned when Iacocca and Maher do what they do best—rail against the medical profession and our health care system—is that the chairman himself, in talking of the Japanese competition, was quoted in a national publication as saying that, "They go out into a cornfield. They make sure they hire young and educated people. And they make sure they won't have pensions or health benefits costs to worry about for 20 years."

I have some advice for Messrs. Iacocca and Maher. Stop blaming American physicians for your problems and start making better cars! It is not the medical profession's fault that Japan hires younger and healthier workers. I happen to own an American car (not a Chrysler), but I would like to ask them how many foreign automakers flock to the United States to study how Chrysler makes cars. But great numbers of foreign physicians still travel from afar to learn at the side of American physicians. And as Jack Paar once remarked, "Immigration is the sincerest form of flattery."

Ironically enough, it has been suggested by more than a few observers, including Edward Annis, M.D., who has been saying it for years, that business leaders have helped to cause the very same health care cost problem that they now lament. Let us not forget that it was business that first devised the idea of linking health insurance to employment, and it was business that lobbied so vigorously and successfully to have their employees' generous health care entitlements sheltered from income taxation. In promoting first dollar coverage plans and insulating their employees from taking any personal responsibility for their health care costs, business fostered an "I don't care, it's all free" public attitude. From decades of encouraged neglect, "The wheel," as Shakespeare would say, "is come full circle." So I, for one, am growing tired of the constant whining and criticisms directed by some big business leaders toward the medical profession for problems that they were instrumental in causing. They, not physicians, gave the store away at the bargaining table.

Articles also regularly appear expressing concerns

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about increasing monies being expended from corporate assets for retiree health benefits. One large Hartford-based insurance company ran an advertisement in the *Hartford Courant* recently, the heading of which read: "Corporate Assets Are About to Go to Health" — an interesting and effective play on words. The text of the ad went on to say that this year alone, American companies will spend more than $10 billion on health care for their retirees. It continued by stating that if the cost of retiree medical benefits is extrapolated for every current employee who has been promised them, the figure is a whopping $400 billion plus in 1990 dollars. The implication was very clear—medical costs are desperately bleeding corporate America.

But I think that it is vital for this corporate America to understand its role in what is happening. Nowhere in that *Hartford Courant* quarter-page advertisement (or in other articles for that matter) did it allude to the fact that it was this same corporate America that promised employees these entitlements even during retirement without informing their shareholders what the deferred compensation for labor-peace tradeoff would cost. Despite the temptation, I do not wish to engage in business bashing. Rising health-care costs are a bona fide concern to everyone, and physicians are very cognizant of the effect of those costs on American business. Medicine knows that corporate health-care costs exceed $150 billion this year and recognizes that 78% of all strikes in the United States last year were over health-care costs—not wages (up 18% from 1986). Furthermore, physicians understand the reality that 20 years ago only 9% of American corporation pretax profits went to health care compared to 50% today. But it is also a fact that business certainly shares with other parties more than minor culpability in the overall rising health-care costs dilemma.

It's pretty simple, really, to figure out why the Lee Iacoccas and organized labor want government-financed national health insurance. Companies, particularly those with aging workers who have full current and retirement health-care benefit packages, do have mounting financial problems. Unions are experiencing increased difficulties in securing more benefits for their members and justifying their existence. The solution for some business leaders and most of organized labor is to free them from that responsibility and place it on the backs of the American taxpayer in the form of national health insurance. Consider that the National Center for Policy Analysis estimates that a Canadian health insurance plan for the United States would cost us $339 billion in new monies (taxes). To raise such funds, the federal government would have to raise the payroll tax rate by 15 percentage points, increase income-tax rates by 14 percentage points, or enact a value-added tax equal to about 10% of all goods and services. John C. Goodman, president of the center, says that he is "amazed that corporate executives aren't aware that a national health insurance scheme would entail huge taxes for their industries." Are you listening, Mr. Iacocca?

Can anyone, even Mr. Iacocca, be serious about having the federal government administer a national health plan? Too many times we have heard stories like the one about the Boston woman who underpaid her income taxes by 10 cents. Her bill, after penalties and interest: $54.94. But while IRS bloodhounds were tracking down this dime, they had on their books from $30 billion to $40 billion in unpaid taxes that they hadn't gotten around to collecting. Fortunately, as demonstrated in recent polls, a majority of the public understands what a disaster such involvement would entail. As I recall, our government played a starring role in that Washington production called the "Savings and Loan Fiasco." Maybe there is some degree of consolation to be derived from Will Roger's observation: "Just be thankful you aren't getting all the government you're paying for."

We have a major problem with rising health-care costs but business, labor, insurance, and government railing against the medical profession have not contributed a single solution. For all our strengths in America, we could learn a great deal from the Japanese and the Chinese. In an excellent article from *The American Enterprise*, Karl Zinmeister refers to Japan's single great strength which economists call human capital—the attitudes, health, and intelligence of its people. The author goes on to describe why its population is so healthy and talented: "stable, supportive homes get youngsters off to a very good start in life." Mr. Zinmeister says "we talk about the drug crisis, the education crisis, problems of teenage pregnancy and juvenile crime," and how all these ills trace back predominantly to one source: broken families. While 60% of American children will spend at least some time in a single-parent family before they reach adulthood, compare that with the 95% of Japanese children who live in married, two-parent households. Only 1% of Japanese births are illegitimate versus nearly 24% in the United States (a major factor in the infant mortality problem). Japanese divorce rates are about one fourth to one fifth of ours and crime in that country is minimal. In a nation of 120 million, there were fewer than 2,000 instances each of homicide, robbery, and rape. Those figures respectively for the United States, approximately twice as populous, were 20,000 homicides, 518,000 robberies, and 91,000 rapes. All of these factors have a huge impact on the health and health care costs of a nation. No wonder Japan leads the world in longevity.

As United States automakers have discovered, the Japanese are not to be taken lightly. Certainly their diet, high in fish and rice, contributes to their enviable record of longevity, but their relatively stable life-styles and low trauma rates are also major factors. As for the specific impact diet can have on health, a recent Cornell University study of 6,500 Chinese people revealed that they eat 20% more calories than people in this country, but people here are 25% fatter. Some 38-40% of calories in American diets come from fat compared to only about 15% for the Chinese. It is also interesting to note that heart disease, colon cancer, and breast cancer — common in the U.S.A. — are relatively rare in China. Even more noteworthy are reports by researchers in the *Journal of the National Cancer Institute* that Chinese-Americans who had adopted a Western life style—a sedentary way of life and diets high in saturated fats—were at much greater risk for colon cancer than were their more traditional counterparts. Mark Twain was once heard to remark that " the only way to have good health is to eat what you don't want, drink what you don't like and do what you would rather not." While obviously overstating the situation, it is clear that Twain's prescription is not being filled in the United States—and we have the poor health and high health-care costs to prove it!

It is total folly for business and labor, insurance and government to continue its relentless policy of castigating medicine for societal problems that can only be solved by all of the parties working together. As the motto of the Scripps-Howard newspapers states so appropriately: "Give light and the people will find their own way." Control Data Corporation tells us that medical care costs are 18% higher for smokers than for non-smokers, 11% more for nonexercisers than exercisers, and 13% higher for those who don't wear seat belts. Baker Hughs, Inc., in Houston, found from its own analysis—just like every other company that studied the problem—that a "significant portion of its health-care costs are from life-style related illnesses." As Joe Vinson, director of compensation and benefits put it, "We're spending over 50% of our health costs on illnesses of *choice*."

Johnson and Johnson, an industry leader in providing a wellness program for its employees for the past 11 years, saved $378 per employee last year by lowering absenteeism and slowing the rise in its health-care expenses. While smaller companies may not be able to duplicate J & J's Live for Life program, at the very least they should encourage their employees to live healthier lives. The federal government spends less than 1% of our national health bill on health promotion and education. It must spend considerately more than that and a deeply rooted commitment is needed to develop a national approach to combat a very serious, costly, and growing problem—the American life-style. Many people are surprised to learn that the Chinese are more physically active then people in the U.S.A. They ride bicycles every day.

Organized labor should put its vast resources together and apprise its members what is at stake and how healthier life styles will ease personal and national health care expenditures. After all, as the benefits consulting firm of A. Foster Higgins points out, some 79% of employers have raised employee deductibles since1985. Some schools have active health promotion programs for their students while others only give the subject lip service. Clearly pressure must come from the administrations and superintendents for better programs.

Health insurance companies throughout America must do their part in addressing the issue. Their premium notices could include educational materials on healthier life styles and the consequences for the policyholders and their children for not taking better care of themselves. The insurance companies have all the statistics. Why don't they use them and publicize the facts? Medicine must participate, too, and do more on its own to raise the awareness level of patients. People must come to realize that the other alternatives will be planned and public rationing of care because our funds for health care are not infinite. This is especially important inasmuch as every poll on the subject continues to show that the American people want more and better health services including, of course, the very latest medical technology. Consider how far we have progressed from the day over 200 years ago when Voltaire cynically said that "the role of the doctor is to amuse the patient until nature affects a cure or does not." Some 46 years ago, Winston Churchill, referring to the development of nuclear arms, observed that the "Stone Age may return on the gleaming wings of science." Today it is precisely those same gleaming wings of science in the form of medical technology that have saved countless lives, enabled so many others to live longer, more productive lives, and which will lead us away from the dangers of AIDS and Alzheimer's disease and those new threats which will surely take their place.

While it is fine to recognize and point out the many strengths in our present health care system that work so well for 87-88% of our population, we must acknowledge areas which must be shored up, areas such as a Medicaid program that covers less than 42% of this nation's poor below the federal poverty level. When the program began some 25 years ago, 76% of our indigent population were eligible for services. More and more needy people are forced off the Medicaid rolls every year as states and the federal government try to cut costs of the program.

Only 5% of Medicaid enrollees are in nursing homes and yet that 5% consumes 43% of the total Medicaid dollars. If we can get a grip on long-term care, then needy individuals who rightfully deserve help from Medicaid can get onto the rolls. Free Medicaid from the burdens of long-term care and it will once again take its place as a true friend of the poor. Perhaps things are improving, however, on the financing of new programs.

It is interesting to note the results of a national tracking poll hotline conducted for a recent conference on "Economic and Politics in the 1990s." The poll gave respondents the details of the recent Rostenkowski proposal (spending freeze, COLA freeze, cutting defense spending 3% a year, doubling sin taxes, and a 15-cent gasoline tax increase). Asked whether they would favor or oppose the package if the purpose was to eliminate the budget deficit in four years, some 52% were opposed, only 38% in favor.

The next question repeated all the details of the deficit reduction plan and asked what if money were earmarked instead for "housing the homeless, improving schools, making roads and bridges safe, and building more jails." Suddenly 62% were in favor, 33% opposed. If long-term care and taking care of the uninsured had been mentioned, I would bet a couple million dollars of Lee Iacocca's pension that the percentage would have been higher than 62%. The all-powerful court of public opinion indicates that the American people will accept new taxes if they are used for the right purpose.

The deficit reduction package included a mere nickel increase in the federal gasoline tax effective 1 December 1990, despite the urgent need for new revenues. it is interesting to note that, after adjusting for inflation, Americans spent some 35 cents less per gallon in 1990 than they did in 1950. Before the Iraqi crisis, other industrial nations paid an average of $2.01 per gallon of gas—about 80 cents more than Americans. If we paid a similar amount, $80 billion ($1 billion per penny increase) would be available, which could finance long-term care and a program for our uninsured— and still allow a tax credit for those who could afford the increase.

Business and labor, government and insurers: Lay down your spears, and let all parties participate in meaningful and constructive dialogue to solve the problems in our health-care system. There has been far too much heat and too little light generated on the subject. Dismantling the present system will serve no useful purpose—shoring up its weakness will. At 20%, the physician services component of our total health care bill has remained constant since 1950. Some critics, of course, maintain that slashing physicians' incomes will have a significant impact on rising health care costs. Even if such incomes, after expenses, were cut an outrageous 50%, a savings of *only* 5% overall would be achieved—and inflation would wipe that out inside of a year! The point is that the problem of rising health-care cost will not be solved by tampering with physicians' incomes. Every American must do his or her part to address the problem, and it's time that medicine got some help in that regard. Shouldn't good citizenship also require standing for a healthier lifestyle and encouraging others to practice good health habits? When will our legislative, business, labor, government, and insurance friends see the forest through the trees?

Although delivered to the U.S. Senate 43 years ago, Peter Marshall's words are just as true today. "Give us clear vision," said the former Senate chaplain, "to know where to stand and what to stand for—because unless we stand for something, we shall fall for anything."

New CSMS Health Awareness Packets: How to Order

Our new CSMS informational packets containing eight colorful health awareness pamphlets have just been published, with an advance mailing going to all CSMS members. Among the health promotion titles relating to risks of smoking, alcohol, STD's and poor diet, there are also titles like Health Care Costs and Patient-Physician Teamwork.

Reasonable numbers of these new CSMS pamphlets are available without cost to CSMS physicians to pass on to their patients, or to local community opinion leaders. The Spanish version of the pamphlets, soon to be available, may also be ordered from CSMS now. Part of our 1991 Health Promotion Project is to supply these packets also to legislators, other government leaders, public health agencies, schools, libraries, employers, unions, news media and service agencies.

To CSMS: PLEASE SEND US CSMS HEALTH AWARENESS PACKETS ASAP:

Number in English:_____ Number in Spanish:_____

____, M.D.

(Please PRINT your name clearly here, and mail to CSMS, 160 St. Ronan Street, New Haven, CT 06511)

The Satisfactions of Pediatric Practice

MORRIS A. WESSEL, M.D.

"WHAT is it that you find so satisfying after four decades of pediatric practice?" asked Dr. Howard Spiro, Professor of Medicine, at a recent seminar in the Program for Humanities at Yale. I appreciate the opportunity to share my answer with readers of Pediatrics in Review. I practice primary pediatrics in association Dr. Robert LaCamera and Dr. Robert Anderson in New Haven, Connecticut. I find that providing primary care from infancy through adolescence offers a satisfying opportunity to serve both parents and children.

In our practice, we consider that the primary physician is the first contact with the health care system. We tell our parents and children that one doctor is always available by phone to consult and, if necessary, to see the child either in our office, at home, or in the emergency department. We explain that the three of us are equally interested in providing pediatric care, and we encourage parents to seek appointments with any one of us.

In our office, the prenatal pediatric conference provides an opportunity to become acquainted with prospective parents. The discussion usually focuses on the health of the expectant mother, the course of pregnancy to date, and plans for care and feeding of the infant. The expectant father usually participates actively in these discussions.

The Yale "Rooming In Plan" encourages the participation of fathers during the delivery and in the car of the infant, establishing the experience as a family event. I spend considerable time at the bedside during the lying-in period and enjoy helping mother and fathers as they care for their infant.

The first weeks at home with a baby demand a major reorganization of parents' priorities. New parents tend to feel inadequate when a baby suffers gas pains, spitting up, cramps, unusual bowel movements, hiccups, and fussiness. We find that a phone call (which we often initiate) is reassuring and appreciated because it indicates our desire to be supportive and helpful. Many mothers are exhausted and depressed at this moment. They are often so totally involved with the baby that it seems as if the mother and baby are one unit. Within a few weeks, however, most women begin to become increasingly interested in the home and wider community.

Well baby visits, repeated illnesses and injuries, and school and camp examinations provide opportunities for developing close relationships with parents and children. We rarely see a stranger in our practice.

I knew early in my training that it was important for a pediatrician to have an understanding of infant and child development. I did not realize, however, that this knowledge would be a part of my daily routine. A few examples will illustrate this point.

An infant aged between four and eight months usually manifests "stranger anxiety," shown as a strong preference for the primary caretaker (usually the mother), who often comments: "He's spoiled. I can't leave him with anyone. What did I do wrong?" When I explain that this behavior is not an indication that the infant is spoiled, but rather that he or she has matured sufficiently to be able to recognize the importance of the devoted care he or she has received from the primary caretaker, the mother's face lights up with pride.

Early in the second year, many parents ask why a child who is increasingly independent may at times be quite clinging. A toddler's drive to be independent and venturesome is at times frightening—he wonders whether he might wander so far away that his parents would be unable to find him. He runs back, clings to his

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mother for a few seconds, gets "recharged," and takes off again.

Fortunately, most illnesses in pediatrics are self-limited viral episodes or upper respiratory tract infections with associated otitis, which respond to antibiotics. This is usually simple to conclude after examining the child. However, the pediatrician must be always on the alert for more serious illnesses that may occur, of course, and be ready to arrange specific studies and consultation when necessary.

Easily forgotten is the fact that headache, body aches, nausea, cramps, vomiting, diarrhea, and vertigo are all disconcerting to young patients; "It's only a viral infection and will run its course" may make sense to a physician, and to many parents, but it is hardly reassuring to a child or adolescent who is frightened by malaise and weakness. Behavioral changes such as whining, clinging, irritability, and the desire for a pacifier or a bottle represent normal regression associated with bodily discomfort. It is important to prepare parents for this predictable behavior.

Children approaching puberty and adolescence are also frightened by bodily discomfort. They are beginning to be aware of the possibility of experiencing a critical illness. Even before the appearance of pubertal signs, the rise in concentration of hormones in the body intensifies all bodily feelings. Children at this moment feel everything more intently. When they cry, they sob; when their sense of humor is present, they are great! Sick children who have warm, trusting relationships with their doctors benefit greatly from their physicians explaining to them that, although their discomfort is severe and frightening, the examinations reveal nothing other than a viral infection and they will feel better in a few days.

As children mature, they may wish to be alone with their doctor. Confidentiality becomes increasingly important as children grow older, and the need for this should to be explained to parents well in advance of the adolescent years.

I find it worthwhile always to ask a child which symptoms bother him or her most, thus reassuring the child that I care about his or her feelings and concerns. Some concerns can be assumed even if not verbalized by the patient. For example delay in the appearance of secondary sexual characteristics, unequal breast development, and delayed menarche concern many girls. Boys worry about tenderness around the nipples, or gynecomastia. The moment of menarche in girls and nocturnal emissions in boys are always of concern. A casual comment during the examination, saying "You might be wondering about . . . . "is reassuring. Telling a late-maturing child that the breast buds and early pubic hair indicate development is progressing normally, even if later than in some of their friends, helps a young adolescent feel better about his or her development.

The girl who matures early needs a kind word too. "A lot of boys must think you are all grown up," I said to a beautiful 10-year-old girl, just under five feet in height and weighing 90 pounds, who already had achieved menarche. "Yes," she responded, "The boys don't understand that I'm just a little girl inside. I like to play with my dolls."

Recognizing these issues in a casual, but authoritative, manner encourages future discussions, particularly in sexually related matters. The problem confronting all adolescents is whether or not to participate in the sexual activity that is increasingly common during adolescence. For some, it is a matter of "belonging" to the "grown up" group, a "right of passage"; for others, it is an expression of mutual commitment in a meaningful relationship or it represents a desperate yearning "to be loved and to be held."

I have had to learn to be nonjudgmental. Nevertheless, I indicate that I believe that sexual intimacies represent serious decisions about which I think one should think carefully before becoming involved. I try to communicate that if an individual does choose to participate in sexual relationships, he or she should understand the risks and the need for contraceptive measures.

I also discuss the details of sexually transmitted diseases. I believe that the best help that one can offer young people is to let them know that one understands their restlessness and struggles at this moment and trust they will make wise decisions. At some time during early adolescence, I also discuss the hazards of drugs and drinking. I am convinced that young people, however they may work out their lives, are likely to mature successfully when they know adults they can trust will be available when needed.

The childhood years offer an excellent background for serving adolescents and parents. At one moment youths act with great independence, charging ahead in many direction, but at another moment they may be quite childlike. They need to be respected and taken seriously. Parents also benefit by support of their pediatrician, whom they have learned to trust over the years.

One of the pleasures of 38 years of pediatric practice is the increasing number of former patients who, as they are about to become parents themselves, ask us to provide pediatric care for their child. The mutual feeling of trust established when these adults were children forms an excellent basis for a successful parent-doctor relationship in caring for this next generation of children.

Loop Diuretics: A Practical Guide to Their Use and Selection

MICHAEL UJHELYI, PHARM. D.

Introduction

IN addition to the three currently marketed loop diuretics (furosemide, bumetanide, and ethacrynic acid), there are several agents soon to be approved by the FDA. With the development of additional loop diuretics, it becomes an important issue to completely understand the disposition, pharmacology, and toxicity of each in order to properly to select and employ the most appropriate agent. The differences among these agents are related to: 1) potency, 2) bioavailability, 3) hepatic metabolism, and 4) duration of action. Currently, only furosemide and bumetanide are widely prescribed and thus this article will focus on these two agents.

Clinical Pharmacology

The goal of diuretic therapy is to increase solute (sodium) load within the collecting duct yielding an osmotic diuresis. To achieve this, the reabsorption of filtered sodium must be blocked either at the proximal tubule, loop of Henle, or distal portions of the nephron. Interference with sodium reabsorption at the loop of Henle will yield the greatest diuresis since the majority of solute free water is generated by the active sodium pump located in the ascending loop of Henle.

Loop diuretics act upon the ascending loop of Henle, inhibiting sodium transport from the lumen of the nephron to the surrounding medulary space. The net result is a 20-35% increase in the fractional excretion of sodium.[1,2] The resultant increase in naturesis will produce a concomitant increase in diuresis. For either furosemide or bumetanide to elicit a naturesis, it must reach its site of action, the lumen of the ascending limb of the loop of Henle. Because these agents are highly bound to serum proteins (>95%), they can not be filtered through the glomerulus into the lumen of the nephron.[3,4] Rather, furosemide and bumetanide reach their site of action within the lumen only through active secretion from the blood to the lumen at the proximal tubule. Therefore, the response to these agents is not related to blood concentration but to their concentration in the urine.[4] Thus, any physiologic abnormality or pharmacologic agent that inhibits these active processes will decrease the effectiveness of these diuretics.

Dose Response: The dose or concentration response of furosemide and bumetanide can be described as an “s” shaped curve, such that between the minimum and maximum effective dose there is a steep response curve (see Figure 1). This brings into question whether once a day versus multiple daily dosing is preferred. Because of the nature of the dose response curve the following dosing regimen is commonly seen in patients with adequate renal function. An 80mg twice daily dose of furosemide may provide a greater 24-hour diuresis than 160 mg once daily dose while 40 mg four times daily will provide no diuresis. This phenomenon can be simply explained by the fact that 40-80mg of furosemide is the dose required to achieve a minimum and maximum response. Therefore, single doses greater than 80mg will not provide increasing diuresis. It is important to remember that each patient has a different dose response curve for furosemide and bumetanide. Only through careful dose titrations can this dose response relationship be found and used clinically.

Disposition: Furosemide and bumetanide are similar in chemical structure and pharmacokinetic dispostion. Both agents have the same time of onset of action, duration of action, and elimination half-life (see Table 1).

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This series on Drug Information Updates from Hartford Hospital are provided by the Drug Information Center, Department of Pharmacy Services, Hartford Hospital.

Editors: Moses Sing Sum Chow, Pharm.D., and Robert A. Quercia, M.S., R. Ph.

FIGURE I

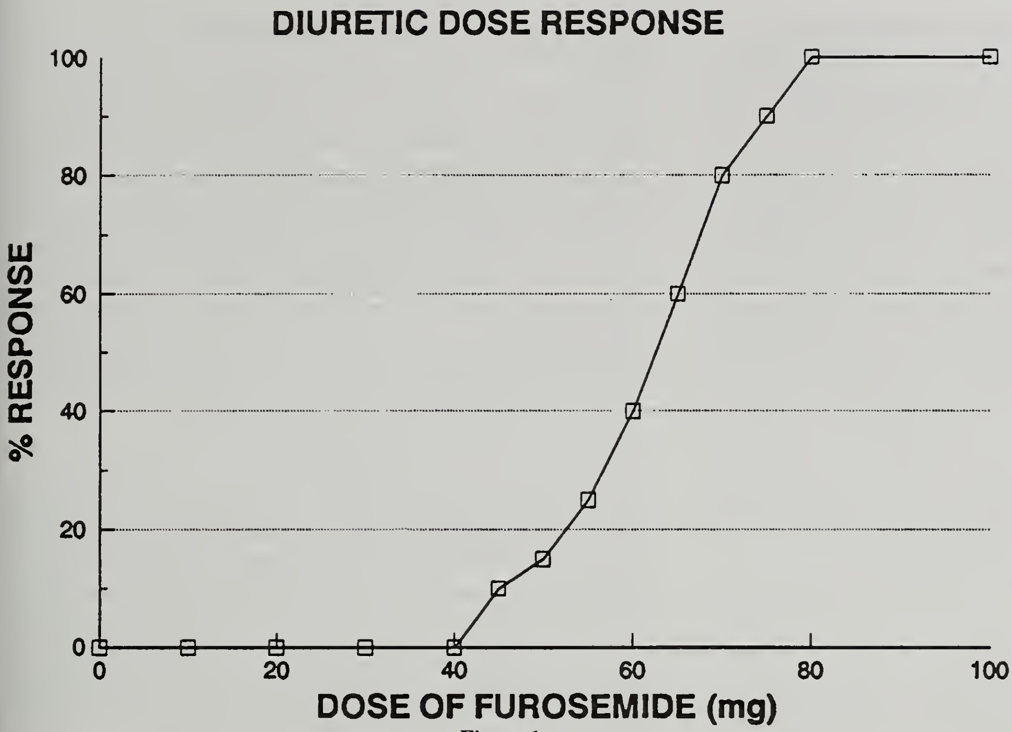

Figure 1

Furosemide differs from bumetanide in the following ways: 1) it is 40 times less potent, 2) it has a higher renal clearance, and 3) it has a lower oral bioavailability. When administered in equipotent doses, these agents produce identical responses.

Diuretic Resistance

Resistance to furosemide and bumetanide becomes a significant problem in patients with refractory congestive heart failure, renal insufficiency, ascites, or nephrotic syndrome.[1,4-7] Resistance to either agent occurs because the diuretic is unable to reach its site of action (because of insufficient renal blood flow or inability of the active transfer pump to function) or there is an insufficient sodium load presenting to the loop of Henle. To overcome these problems, one must improve renal hemodynamics. Increasing renal blood flow will increase drug delivered to the active transport site as well as increase the sodium load to the loop of Henle by limiting sodium reabsorption in the proximal tubule.[2] In patients with congestive heart failure this is accomplished by increasing cardiac output by inotropic and afterload reducing agents, while administering "renal dose" dopamine or human albumin will achieve this effect in patients suffering from resistant ascites or nephrotic syndrome.[8-12] To overcome the diminished ability of the nephron actively to secrete these agents into the lumen (occurring most commonly in renal insufficiency) higher doses of the diuretics are needed.[4]

Combination Therapy

Loop diuretic resistance can also be overcome by concomitant use of thiazide or related diuretics, specifically metolazone (Zaroxlyn) or chlorothiazide (Diuril). The use of sequential nephron blockade has been demonstrated to have syn-ergestic effects especially in patients refractory to single-diuretic therapy.[2,3,13-15] Metolazone inhibits sodium reabsorption at the proximal tubule, thereby delivering a higher sodium load to the loop of Henle. It is also capable, like chlorothiazide, of preventing sodium reabsorption in the distal nephron. In either case, two of the three portions of the nephron that reabsorbed sodium are blocked when combined with a loop diuretic. The resultant is a synergistic increase in solute load to the collecting ducts. Since combination therapy with a loop diuretic may produce a massive diuresis, resulting in serious adverse hemodynamic consequences, it should only be employed in patients resistant to large doses of a single loop diuretic.

Diuretic Selection and Dosing

There is little evidence to suggest that one loop diuretic is superior to the other. Most studies have reported no differences in efficacy or toxicity between furosemide and bumetanide. However, one report found that furosemide produced a greater naturesis in patients with chronic renal failure than bumetanide.[1] The authors attributed this difference to higher furosemide blood con-

Table 1

	Furosemide	*Bumetanide*
Oral		
Bioavailability (%)	40-60	70-90
Time to peak (hrs)	1-2	0.5-1.5
Onset of action (hr)	1	0.5
Duration of action (hr)	4-6	4-6
% excreted unchanged in urine	50-60	30-50
Intravenous		
Onset of action (min)	5	5
Duration of action (hr)	2-3	2-3
% excreted unchanged in urine	60-80	35-60
Elimination half life (hrs)	0.5-1.5	0.5-1.5
Clearance (ml/min/kg)	1-2	2-3.5
Protein binding (90)	>95%	>95%

centrations due to the low rate or nonrenal elimination of furosemide. This difference however, can easily be overcome with higher doses of bumetanide. In addition, both furosemide and bumetanide have similar toxicity profiles,[16] although animal studies have suggested that bumetanide has less ototoxicity than furosemide.[11,18] Both agents, however, have a low incidence of ototoxicity which can be avoided by using longer infusion periods, especially in patients with renal impairment. Therefore, the selection of a loop diuretic should be based upon ease of administration and cost. With the cost of an equivalent dose of bumetanide ($0.74 and $4.90 per 1mg of oral and intravenous doses) being four to 15 times that of an oral and IV dose of furosemide respectively, one must favor the use of furosemide since both have the same ease of administration.

Dosages are dependent on the therapeutic use. For IV use, one generally starts with doses of 20-80 mg of furosemide or 0.5-2mg of bumetanide. If a response is not seen within 30 minutes, the dose is doubled until the desired clinical response is obtained or a maximum dose is reached (500mg of furosemide, 10mg bumetanide).[3] If the maximum dose is reached, then a thiazide diuretic should be added. Occasionally a patient who does not respond to bumetanide will respond to furosemide and vice-versa. The reasons for this are unknown, but changing from one to the other is warranted if a patient fails therapy.

For oral therapy, low doses should be employed initially (20mg furosemide, 0.5mg bumetanide) and titrated upward on a daily basis. Twice or three times daily dosing may be needed to maintain fluid balance since the duration of action of the oral agents is only about six hours. In either case, one should define a dose response relationship for each patient, which can not be accomplished if one switches to and from several loop diuretics. Recommended use of these agents is described by the dosing algorithm presented in Figure 2.

Conclusion

Loop diuretics are potent therapeutic agents with a rapid onset of action. Furosemide and bumetanide are commonly prescribed loop diuretics that have similar efficacy rates despite bumetanide being 40 times more potent. In addition, both agents have similar side effects and are easily dosed and administered. However, since furosemide has a significantly lower cost than bumetanide it should be used as the first-line agent.

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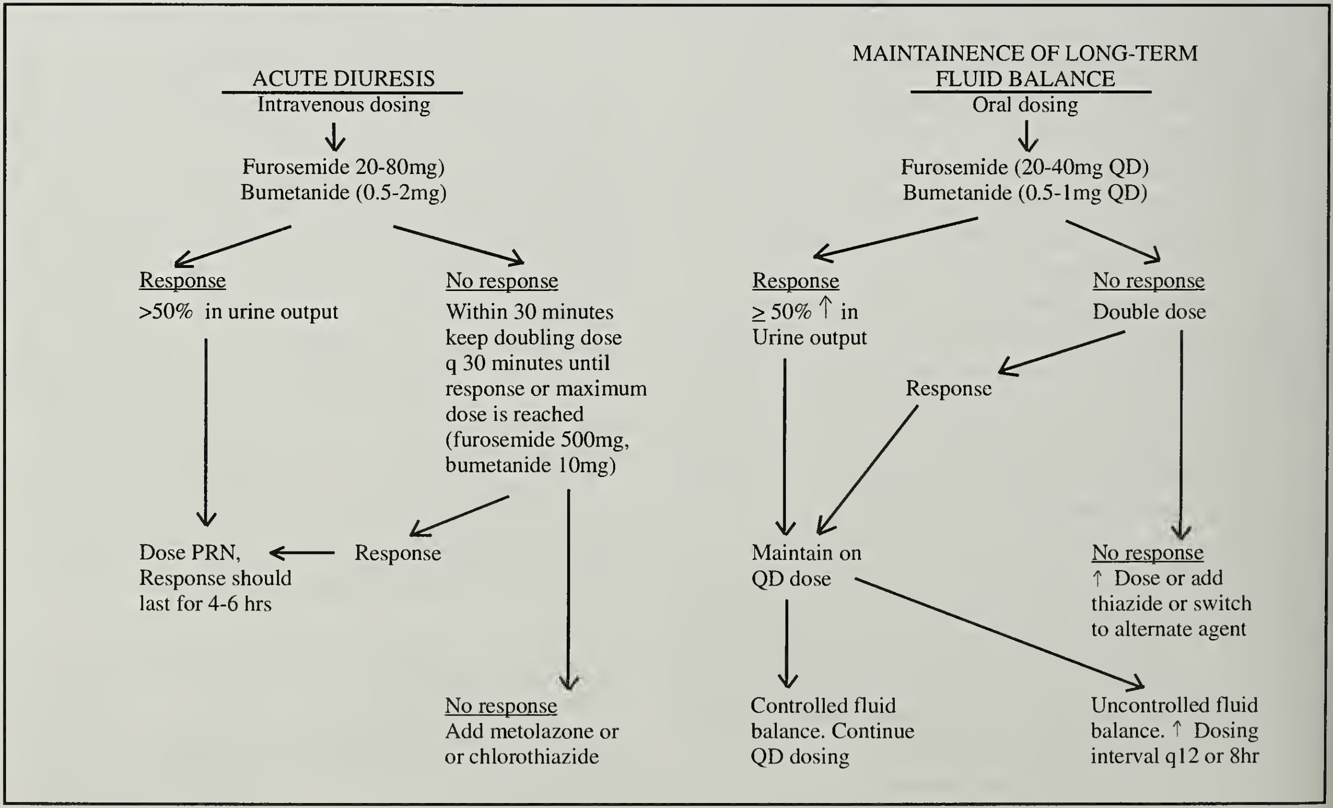
ACUTE DIURESIS
Intravenous dosing
Furosemide 20-80mg)
Bumetanide (0.5-2mg)
Response
>50% in urine output
No response
Within 30 minutes keep doubling dose q 30 minutes until response or maximum dose is reached (furosemide 500mg, bumetanide 10mg)
Dose PRN, Response should last for 4-6 hrs
Response
No response
Add metolazone or or chlorothiazide
MAINTAINENCE OF LONG-TERM FLUID BALANCE
Oral dosing
Furosemide (20-40mg QD)
Bumetanide (0.5-1mg QD)
Response
≥ 50% ↑ in Urine output
No response
Double dose
Response
Maintain on QD dose
No response
↑ Dose or add thiazide or switch to alternate agent
Controlled fluid balance. Continue QD dosing
Uncontrolled fluid balance. ↑ Dosing interval q12 or 8hr

Figure 2
Recommended Dosing Algorithm

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Medical and Nonmedical Uses of Anabolic-Androgenic Steroids

AMA COUNCIL ON SCIENTIFIC AFFAIRS

Recent trends in the use, abuse, and diversion of steroids for nonmedical purposes illustrate a growing problem that not only imposes health risks but presents ethical dilemmas as well. Concern over the known adverse effects, the limited research into the long-term effects, and the ethics of engineering body size and performance through anabolic-androgenic steroid use has led to legislative, legal, and education responses. Increased penalties for distribution to minors and stricter controls in prescribing practices have been enacted through state legislation and federal initiatives. Government, some health professional organizations, and some sports groups have denounced the nonmedical use of anabolic-androgenic steroids and have developed materials to educate their members, other professionals, athletes, educators, and the public at large.

ANABOLIC-androgenic steroids (AAS) are synthetic derivatives of testosterone, most of which were developed in the 1950s in attempts to separate the hormone's masculinizing (androgenic) and skeletal muscle-building (anabolic) effects. There are no steroids at present that have purely anabolic effects. These drugs are not to be confused with the adrenal corticosteroids.

Administration may be oral or parenteral, and parenteral injections may be in oil or water. In general, oil-based AAS have a longer biological half-life.

Anabolic-androgenic steroids are prescription drugs that have legitimate medical uses. These include certain types of anemias, hereditary angioedema, certain gynecologic conditions, and protein anabolism.[1] They also may have a role or be useful in conjunction with the following: constitutional delay of growth, an adjunct to growth hormone therapy, and osteoporosis. Medical indications are estimated to account for fewer than 3 million prescriptions per year in the United States.[2]

Nonmedical use of Anabolic Steroids

Anabolic-androgenic steroids are most frequently used to aid in body building and/or to provide skeletal muscle enlargement or increased strength by persons in good health. Their use for these reasons has been condemned on the basis of ethics (fair play) by many organizations, including the American Medical Association (AMA), the American College Health Association, the American Academy of Pediatrics, the American College of Sports Medicine, the National Strength and Conditioning Association, the National Collegiate Athletic Association, the National Football League, the US Olympic Committee, and the International Olympic Committee.[3,4] These organizations also condemn their use because of the known adverse effects, the lack of data regarding long-term gains in size and strength, and the unknown long-term damage to health.

Historically, use was opposed by medical organizations and sports groups on the grounds that these substances were ineffective. Recent research, however, shows that increases in skeletal muscle mass and strength are observed in users who already are training with weights and who continue intensive training while maintaining high-protein, high-calorie diets. Those not adhering to such training and diet regimen do not consistently report improved performance.[5,6] The wide dissemination of initial

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From the Council on Scientific Affairs, American Medical Association, Chicago, Ill.

This report is in response to Resolution 152 (A-89), which called on the American Medical Association to review the trends in steroid use, identify current prevention activities, urge the development of steroid treatment programs, and support stricter laws and legislation to limit use. This report of the Council on Scientific Affairs was adopted by the House of Delegates in December 1989.

This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the views of scientific literature as of February 1989.

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reports of AAS ineffectiveness, coupled with subsequent announcements of research indicating effectiveness in certain instances, has created a credibility gap between AAS users and the scientific community.

Most athletes report that they benefit from ingesting large quantities of these agents. Perceived benefits include enhanced physical appearance, capacity to train at high levels, increased strength, and heightened libido, mood state, and self-confidence. Feelings of euphoria, well-being, and arousal also are named as benefits[7] Use for cosmetic reasons by noncompetitors who seek bodies of lean muscle mass has also been noted.[8]

Epidemiology

Use of AAS by athletes was first reported in the United States during the 1960s. A growing demand by those involved in powerlifting and bodybuilding was reported in the 1970s. Use has since spread to football players, swimmers, track-and-field competitors, and other professional athletes.[9]

Today, AAS are used by competitors of all ages, by men and women alike, and by those at all levels of athletic activity—professional, amateur, collegiate, and high school. Although prevalence is difficult to accurately assess, nonmedical use is believed to be widespread.[10,11] Use among weight lifters and bodybuilders is estimated to be as high as 80%, while that among all competitors is at 50%.[4] In a study of 250 weight lifters, use was admitted by 110.[12] Current and former professional football players, in testimony at the May 1989 Senate Judiciary hearing on federal scheduling of anabolic steroids, characterized use among football linemen was rampant; however, professional football coaches and team owners estimated use at approximately 6% based on the number of positive tests among players at annual National Football League testing (Leslie C. Ludwick, written communication, May 1989).

The doses and patterns of administration employed by athletes differ markedly from the pattern and dosage for legitimate medical purposes. Doses commonly taken are 10, 100, or even 1000 times larger than those prescribed for medical conditions.[3,5,8] Athletes not only take higher doses than are indicated for therapeutic purposes, they also commonly use several AAS concurrently (popularly known as "stacking") or cycle the drugs, alternately tapering the dosage upward and downward before a competitive event. Initial feelings of euphoria and an increased sense of well-being are reported, while lack of energy, irritability, and dysphoria are reported at the end of a self-administration cycle in much the same fashion as withdrawal from other drugs.[2]

Use has also been observed in health clubs and spas by noncompetitive hobbyists.[13] Neither the illegality of these drugs nor their potential adverse effects seem to deter this nonmedical use. Again, prevalence, while difficult to assess, is thought to be widespread in this population group. At least one source suggests that these individuals who never compete in any sport constitute the majority of nonmedical steroid users.[8]

A recent report indicates that 6.6% of surveyed male seniors in 46 private and public high schools use or have used AAS, with more than two thirds of these teenagers starting at 15 years of age or younger.[14] Another recent study cites a range of use among male students in six high schools from 9% to 19.4%, with a mean of 11.1%. Eighty-four percent of the users participated in competitive or noncompetitive sports, including weight training and aerobics.[15]

One scientist, in summarizing the recent research, comments that "the numbers of individuals are huge, and use has become a growing public health problem, affecting younger and younger persons. Most of the abusers are not professional athletes but, rather, student athletes, bodybuilders, and fitness enthusiasts who are concerned with putting on muscle weight and contouring their bodies."[16]

Source of the Drug

The Food and Drug Administration (FDA) estimates that 1 million persons in the United States take AAS for nonmedical reasons, with black market sales estimated at exceeding $100 million a year in 1987;[17] informal contacts within the FDA currently estimate sales at $300 million to $500 million a year. A large proportion of the drugs are imported, although a few clandestine laboratories exist in the United States. The FDA investigations have documented diversions of these substances by a number of major distributors directly to firms or individuals not licensed by state authorities.[17]

Recent trends reported by the FDA cite a decreased reliance on the part of the black market to obtain drugs directly from domestic manufacturers and wholesalers and an increased reliance on obtaining smuggled substances specifically manufactured for the black market from underground laboratories. Bogus and counterfeit drugs are increasingly being seen on the black market, bearing either fictitious names or those of legitimate distributors and indicating either foreign or domestic origin. Black market drugs also have been commonly found to contain ingredients other than what is declared.[17,18]

It is estimated that 80% of AAS used for nonmedical purposes are obtained through a well-organized black market involving gymnasium or mail-order sources.[2] Drugs are also obtained from other athletes, particularly those competing in countries where such drugs are readily available by prescription. The balance is diverted from legitimate medical and veterinary supplies.[8] In one study of male high school students, 21% said they had obtained AAS from health professionals (defined as physicians, pharmacists, or veterinarians).[14]

Adverse Drug Reactions

While specific complications of medical use depend on variables such as sex, age, dosage, and duration of use and specific drug taken, all AAS have adverse effects. Consequences of long-term use potentially include the following[1,3,5].

Liver.—In addition to impaired liver function, users can also develop cholestatic hepatitis with jaundice, blood-filled hepatic cysts, benign hepatomas, and potentially malignant hepatic tumors.

Growth.—Taken before puberty, AAS can produce premature closing of the epiphyses and thus cause permanent short stature. Other effects on prepubertal children are premature development of pubic hair, phallic enlargement, and increased frequency of erections in boys.

Sexual Characteristics.—Testicular atrophy, changes in prostate and/or seminal vesicles resulting in urinary obstruction, accelerated male pattern baldness, gynecomastia, and lowered sperm count may occur in adult males. There is sufficient evidence to show that luteinizing hormone and follicle-stimulating hormone are depressed by exogenous testosterone.

Females may develop menstrual irregularities, permanent hypertrophy of the clitoris, lowered voice pitch, and changes in hair growth patterns that include beard growth, thinning of hair in the temporal region, and alopecia. One study reports the observed adverse effects of deepened voice and increased facial hair by female competitors in the strength sports.[10] Fluid retention, hypertension, and thickened skin (especially on the back) have also been reported in both sexes.

An expanding body of individual cases and anecdotal reports of adverse effects attributed to use of large amounts of AAS by athletes is appearing in the scientific literature. Elevated circulating concentrations of low-density lipoprotein and reductions in high-density lipoprotein cholesterol concentrations have been reported.[19-22] In addition, elevated skin surface lipid cholesterol concentrations occurring simultaneously with decreased high-density lipoprotein levels and elevated serum triglyceride levels have been noted.[23]

A new case-controlled study of weight lifters suggests that orally administered AAS, particularly alkyl derivatives, may have a more harmful effect than testosterone on blood cholesterol levels.[24] Another recent case-controlled study of male bodybuilders has shown that human growth hormone and/or anabolic steroids affect lipid parameters in a manner to cause cardiovascular risk.[25]

One case report of a 22-year-old weight lifter suggests a link to sever coronary artery spasm, platelet hyperaggregability, and myocardial infarction.[26] Cardiovascular complications including myocardiopathy and septal hypertrophy also have been noted.[27] Stroke in an otherwise healthy 34-year-old male bodybuilder who was taking AAS has been reported.[28] Another case report discusses a 32-year-old bodybuilder with cardiomyopathy and stroke.[29]

A case-controlled study of self-administered AAS in male amateur bodybuilders suggests a seriously increased long-term risk for premature atherogenesis and hepatoxicity.[30] Two cases of hepatocellular carcinoma have been reported in healthy athletes who used AAS for athletic purposes.[31,32]

Two reports in the literature implicate the sharing of needles used to administer AAS in the spread of HIV infection.[33-35] Other reports suggest the following additional risks: colonic cancer,[36] adenocarcinoma of the prostate, [37] fatal rupture of hepatic tumor,[38] and severe cystic acne.[39]

Several case reports have shown marked affective and/or psychotic syndrome occurring in individuals who use AAS.[40-44] One case report described a patient whose dependence on steroids met the *DSM-III-R* (*Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition*) criteria for psychoactive substance dependence—tolerance, withdrawal symptoms, and use of AAS to alleviate dependence. A pattern of continued use despite severe adverse consequences was noted.[45] One report presents preliminary data regarding physical and psychological dependence.

Testimonial evidence suggests that approximately half of world-class athletes would risk serious or life-threatening adverse drug reactions if they could find a drug that would ensure their winning an Olympic Medal.[3] Measurement techniques at present are nowhere near sophisticated enough to measure small amounts of performance enhancement that might mean the difference between being a competitor and a winner.

Possibly because of initial stances by medical and sports organizations that AAS were ineffective in all instances—a position that has since been amended—many athletes place little faith in what the scientific community says. This may be true of adverse effects as well, particularly among those who see no such effects among fellow users. Many athletes report that they are aware of possible adverse effects, but calculate that the reactions may not develop for a decade or so and are problems they will deal with in the future.[47] Other athletes accept the observable adverse effects, such as irritability and acne.

While the aforementioned case studies and ancedotal reports contribute to the growing body of knowledge about potential adverse effects of AAS, the data must be viewed with caution for the following reasons: questionable origin, quality and quantity of the drugs reportedly being taken, and the potential bias of the population being studied (particularly in reporting adverse effects). Issues of confidentiality also must be considered.

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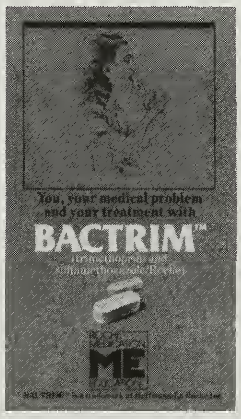
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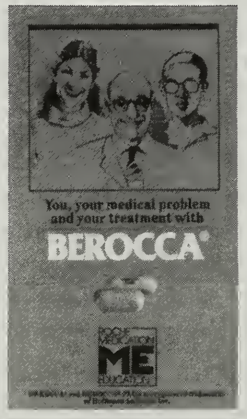
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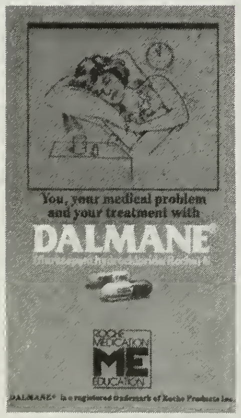
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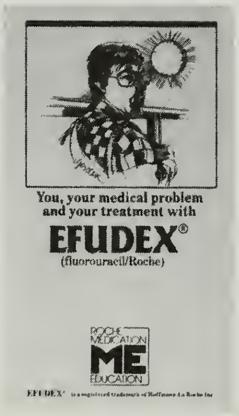
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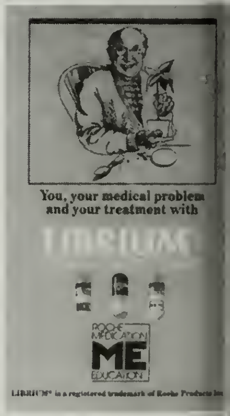
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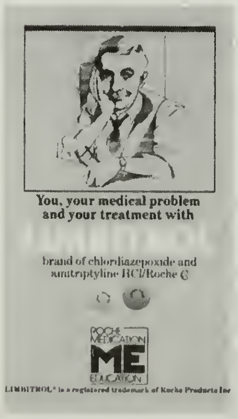
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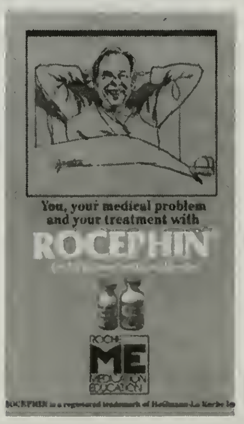
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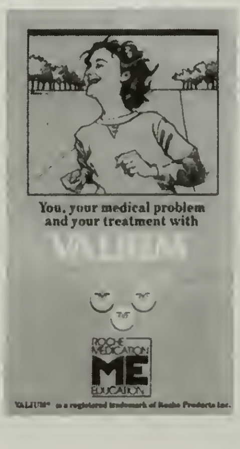
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A technical review meeting convened in 1989 by the National Institute on Drug Abuse concluded that, despite the growing number of reports, definitive scientific data regarding adverse effects of nonmedical use of AAS have yet to be developed.[7] However, participants stressed the need for more case-controlled or cohort studies and identified the following as priorities for further research studies: heart disease and tumors in users, subjective body symptoms such as arthralgias, adrogen biology, and psychiatric effects, and long-term damage resulting from nonmedical use.

Efforts to Control Nonmedical Use

Legislative and Legal Initiatives

The Federal Bureau of Investigation, the FDA, the US Customs Service, and the US Department of Justice have been involved in a nationwide investigation of the AAS black market. As of spring 1990, over 100 individuals have been prosecuted and fined or given jail sentences, and millions of dollars worth of black market and counterfeit drugs have been seized.

The Anti-Drug Abuse Act of 1988 specifically included penalties for distribution of AAS to adults (or possession with intent to do so), with stricter penalties for distribution to minors. Recent changes in the Comprehensive Crime Control Bill also provide for much harsher penalties than in the past.

In addition to federal efforts, many states have acted to control the illegal distribution and sale of AAS. Some states, such as Alabama, California, and Florida, have scheduled the drugs under their State Controlled Substance acts. Colorado, New Mexico, South Carolina, and Texas have passed laws that make certain AAS transactions illegal and subject to felony charges. Other states have elected to ratify state statutes that set forth medical conditions for which these drugs may be prescribed, or to add provisions to, or amend, their medical discipline acts that specify the prescribing of AAS for nonmedical purposes (eg, enhancing athletic performance) as grounds for discipline. Still other states require that warning against their use be posted in health clubs and the implementation of education efforts in high schools. Pertinent state statutes can be found in the June 1989 issue of the *AMA State Health Legislative Report*.[48]

On the other hand, a few have argued for legalized use of AAS by athletes, despite legal status of substances. Allan Evans, in an article in the December 1988 *Financial Post*, makes the case: "Steroids will remain a part of an athlete's training, whether we want it or not, but they should be administered by competent doctors, openly and non sub rosa by coaches."[49] Widespread support for such a posture has not been forthcoming.

Professional Education Initiatives and Activities

Major organizations and groups have taken strong stances on the nonmedical use of AAS and have developed materials to disseminate to their members, other professionals, athletes, educators, and the public at large.

A comprehensive review of the medical literature, undertaken in 1984 by the American College of Sports Medicine, resulted in a landmark position statement on AAS use in sports.[6] The association took the position that abstention from AAS use was in the best interest of sports and endorsed development of effective procedures to detect drug use and policies that exclude from competition athletes who refuse to abide by the rules. A summary of this position, translated into nonscientific language for lay audiences, is available from the college.

The stance of the American College of Sports Medicine is supported by the American Academy of Pediatrics. Its Committee on Sports Medicine additionally called for pediatricians to pay greater attention to abuse of these drugs by their patients, suggesting inclusion of questions regarding the use of AAS and other ergogenic aids when performing preparticipation physical examinations and recommended anticipatory guidance concerning their side effects for all youths at risk.[50]

Journals and newsletters directed at health professionals and publications from sports organizations have featured articles on the use of AAS among athletes and nonathletes.[2,7,51-60] These inform readers of emerging case reports and anecdotal information on adverse effects, serve as a deterrent to prescribing the substances for inappropriate uses, and warn of signs and symptoms of use.

In 1988, the Bureau of Voluntary Compliance of the National Association of Boards of Pharmacy Foundation sponsored a seminar on the dangers of AAS use. Presentations focused on an historical overview of nonmedical use of AAS among athletes, drug pharmacology, appropriate medical use, regulatory perspectives, and model programs to deter use.

The FDA's Office of Compliance, Center for Drugs and Biologics, has issued a "drug alert" to manufacturers, wholesalers, and providers asking for their assistance in assuring the legitimacy of all orders and in being alert to suspiciously large and/or frequent orders. A similar effort has been initiated by its Center for Veterinary Medicine with manufacturers of veterinary anabolic steroid products. The FDA is also attempting to chronicle adverse effects and has asked health professionals to advise its Center for Drugs and Biologics of any side effects and deaths believed to be associated with AAS use.

In addition, the FDA has developed a comprehensive public education campaign. Components include a brochure warning of potential dangers, a poster with a professional wrestler carrying the message, "Don't Pump Trouble . . . Stay Away from Steroids," a radio public service announcement, and a video new release.

The National Strength and Conditioning Association[61] has called for serious and continuing efforts to educate athletes, coaches, athletic trainers, physicians, physical educators, and the general public regarding the benefits and potential risks of AAS documented by the scientific method. The statement also recommended uniform testing requirements at all levels of athletics if testing is to be the deterrent to AAS use. In addition, the association called for a reevaluation of the perspective of sports by supporters of athletic competition (fans, competitors, sports administrators, alumni, and news media) so that accountability can be more clearly defined.

The American College Health Association has long been aware of the problem and has called use of AAS by athletes unethical. In 1966, the association first adopted a resolution opposing such use. The University of Minnesota Men's Athletic Department and the Graduate "M" Club have developed materials for young users that emphasize the major chronic adverse health effects as well as the unattractive excessive muscular development associated with the use of AAS.[62] Materials for audiences such as coaches, teachers, Parent-Teacher Association members, athletic clubs, and television and radio commercials also are available from the university.

Professional and amateur sports organizations have adopted substance abuse policies and guidelines. Elements of these programs include banning specific drugs, mandatory drug testing, and penalties for violation of policies.[63]

The International Olympic Committee has banned the use of AAS. Amateur organizations, which are governed by the US Olympic Committee (a member of the International Olympic Committee) or the National Collegiate Athletic Association, have also banned their use and developed programs that include mandatory drug testing.

Only one professional sports group—the National Football League—has specifically banned the nonmedical use of AAS. Other professional sports groups, such as the Men's International Professional Tennis Council and the National Basketball Association, however, offer a variety of rehabilitation programs for athletes with drug problems. Other employee assistance programs may be offered by individual teams or as part of a leaguewide policy.

Publications such as *Sports Illustrated* have included articles on both performance-enhancing drugs and drugs of abuse. This practice has helped alert athletes to the dangers of drug use.[7]

Commercially produced videotapes also are beginning to appear on the market. These not only focus on the detriments of AAS use, but also emphasize the role of proper training and demonstrate other techniques that do work. Prominent sports figures are used as role models.[64]

Current AMA Initiatives and Activities

The AMA supports increased criminal penalties enacted as a part of the Anti-Drug Abuse Act of 1988. These major penalties are designed to deter the major illicit traffic in AAS.

The AMA also supports the enactment of state legislation to address the problem of misprescribing, since it is at the level where the regulation of the practice of medicine rests. When physicians are misprescribing, state boards clearly have the authority to act. The AMA Department of State Legislation is currently developing model legislation.

The AMA has consistently opposed proposals to legislatively schedule AAS under the federal Controlled Substances Act. Its opposition rests on the belief that the established process for administrative review by the FDA and the Drug Enforcement Administration should be followed in all cases and on evidence that scheduling would have no impact on the major source of the substances, which is illicit importation.

In this regard, the AMA in July 1988 submitted written testimony to the Subcommittee on Crime of the Committee on the Judiciary opposing HR 3216, a bill that would schedule methandrostenolone under the Controlled Substances Act.[65] In April 1989, an AMA official provided oral testimony before the Senate Judiciary Committee, setting forth the AMA's concern over nonmedical use of AAS and stating opposition to congressional intervention to schedule AAS under the Controlled Substances Act.[66]

The AMA Department of State Legislation has devoted an issue of its *State Health Legislation Report* to the topic of AAS.[48] Included was a guest article by Robert E. Leach, M.D. (chair, Sports Medicine Council, US Olympic Committee), a brief background article on use by athletes, a summary of state statutes, and current AMA policy. The AMA is also incorporating information on appropriate and inappropriate uses of AAS into current activities, including the forthcoming *AMA Handbook on Alcohol and Drug Abuse* and the *AMA Physician's Pocket Guide to Adolescent Substance Abuse.*

Recommendations

The AMA Council on Scientific Affairs recommends the following:

1. The AMA reaffirm its concerns over the nonmedical use of drugs among athletes, its belief that drug use to enhance or sustain athletic performance is inappropriate, its commitment to cooperate with various other concerned organizations, and its support of appropriate education and rehabilitation programs.
2. The AMA reaffirm its support of increased criminal penalties enacted as part of the Anti-Drug Abuse Act of 1988 and its support of state legislation that addresses the problem of misprescribing.
3. The AMA reaffirm its opposition to scheduling of AAS under the federal Controlled Substances Act.
4. The AMA reaffirm its willingness to work closely with sports groups, coaches, team owners, amateur and professional athletes, and parents.
5. The AMA continue to endorse the public and profes-

sional education campaign of the FDA.

6. The AMA make available to practicing physicians, legislators, sports organizations, educators, adolescents, and the public existing and proposed educational materials and model state legislation on the nonmedical use of AAS.
7. The AMA identify and widely disseminate information on successful initiatives and activities to curtail the problem of nonmedical use.
8. The AMA encourage survey efforts that provide a better understanding of the nature and prevalence of nonmedical use.
9. The AMA actively encourage further research on short- and long-term health effects and encourage reporting of suspected adverse effects to the FDA.
10. The AMA continue to work with sports organizations to increase understanding of health effects and to discourage the use of steroids on this basis.

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Sprain, Splinter, Splint

E. TREMAIN BRADLEY, M.D.

SPLINTERS. Almost everybody gets one in course of time. If left in place, it usually festers and causes trouble. It may run horizontally within the skin or a little deeper, or it may go in more vertically with just the "butt" showing. So let's get it out. How?

Of great importance is an explanation to the patient ahead of time that he may feel a sharp prick from time to time, and that he should say "Ouch." But emphasize that it is *very* important for him not to move, lest a serious cut result. Wise also is to control the extremity securely to guard against such movement. Even with children I find that they tend to cooperate if you explain that staying still means almost no pain and that moving may cause severe pain. And say "I'm sorry" when it hurts. Your compassion helps the patient.

After the usual cleansing of the area, a razor blade (or scalpel) is used to make an incision along the "horizontal" splinter, beside it on the distal side (nearer the end of the extremity). A number of *very* light sweeps with the blade is desirable. While doing this a tight squeeze is exerted (pinching, if on a finger). This diminishes any resulting pain and also tends to prevent bleeding, which would obscure good visibility. The splinter itself has probably already interrupted some nerve endings, creating partial anesthesia. As the shaft or butt end is exposed, it is pried up and loose with the edge of the blade until it can be grasped with tiny forceps or tweezers and extracted.

Removal of the vertical splinter is not so easy, nor usually as painless. The same principles prevail in general: pressure for hemostasis and pain relief, incision distal to the splinter. A little of the epidermis can be cut and teased away from the butt at the sides, but a slightly deeper cut may have to be made radially from the butt end on the side opposite to the nerve supply. Again the edges of this incision are pried apart to allow grasping the splinter and pulling it out—which usually hurts!

In each instance the area should be squeezed in hopes a little bleeding will flush out any tiny remaining fragments. Soaking the area several times a day should keep the tissues soft and allow any remaining foreign material to be extruded.

Sprained Ankle is a real pain! Ligaments hold the bones loosely in position so they will come together correctly when the muscles are tightened. Now the joint has been forcibly bent beyond the range permitted by the ligaments, which as a consequence have been unduly stretched, torn to some extent. Since they are not elastic or dynamic, fibroblasts must be laid down for fibrosis or scarring to take place, toughening and shortening the ligament in due course.

Why all this preamble? The usual sprained-ankle victim limps along flat-footed, weight on the heel. This puts all the strain again on the ligaments, with resultant pain. The ankle needs support. An Ace (elastic) bandage, fine; adhesive strapping, NO!! (see Helpful Hints, *Conn Med*, 1990; 54:296.) Why not use the excellent built-in dynamic splint, the tendons that run past the joint? They can be tightened by contracting the muscles from which they extend. So instead of walking on a relaxed total foot, the patient should put weight on the ball of the ball of the foot alone, the heel not touching the floor. This necessitates using the muscles in the lower leg which tighten the tendons around the ankle; the more strenuously the muscles are contracted the less pain in the joint. All this requires effort and courage, but the result makes it worth while.

Splinting the knee to immobilize it securely in one position may be indicated, as after fracture or dislocation of the patella, fracture of the knee, injury to a meniscus, or tear of collateral ligaments. For this I like a plaster sleeve applied as follows:

1) Apply a strip of one-inch adhesive tape to the inner, and another to the outer, aspect of the limb from mid-thigh to ankle, having first shaved away significant hair. 2) Stockinette is applied from just below the groin to just above the ankle, and is covered or wrapped with cotton batting from two thirds of the way up the thigh to two thirds of the way down the ankle. Extra turns of padding are applied at the upper and lower edges. 3) Light plaster is then wrapped over this. (N.B., Wearing disposable gloves makes clean-up easy.) 4) Plaster splints are made and applied, one medially and one laterally across the knee. 5) The excess stockinette is then turned back over the plaster above and below, and also the adhesive straps that protrude to the ankle. 6) More plaster is then wrapped around, incorporating the adhesive straps, the raw edges of stockinette and the plaster splints.

The finished product is comfortable and will not slip or slide, nor will it inhibit any joint except the knee.

E. TREMAIN BRADLEY, M.D., solo practice of General Surgery, retired to Norfolk, Conn.

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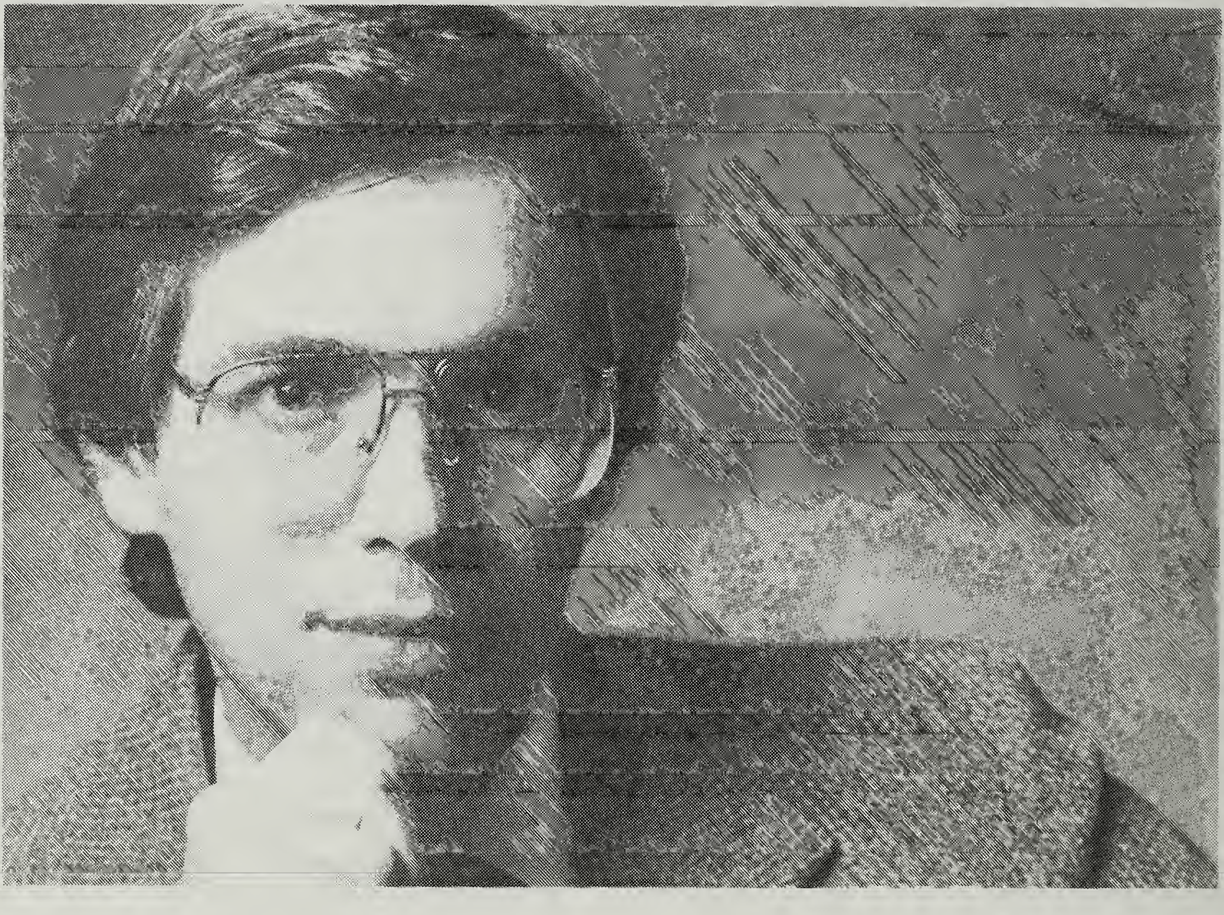
—Dr. Jeffrey Hertz, Ophthalmology, Norwich, CT



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Editorials

Medicine in the News

For the last six months the Connecticut State Medical Society's Executive Director, Timothy B. Norbeck, has been distributing selected notes from his extensive reading of newspapers, trade journals, and the professional literature to the members of the House of Delegates. These have appeared as "gleanings" in a two-page newsletter, House Capsules, since October 1990. Many of the sources are those that few of us are likely to see, at least on a regular basis, and yet it is of vital importance that we remain aware of what the nonmedical public is saying and reading about us. We shall begin therefore with this issue of *Connecticut Medicine* to include Mr. Norbeck's notes from what our forebears might have called his "commonplace book." In his words these brief paragraphs will include "... the highlights of current facts, statistics, and opinions . . . [that] will be likely to impact either directly or indirectly on health policy and costs."

Support for Orthopedic Research

THE 1990 campaign for the Orthopaedic Research and Education Foundation (OREF) has come to a close with Connecticut orthopedists distinguishing themselves, not only by surpassing all campaign goals, but also by joining the Order of Merit (gift of $1,000 or more) in record numbers.

OREF is the major supporter of young orthopedic researchers and is surpassed in dollar volume of grants only by the National Institute of Health.

Order of Merit members in Connecticut (gift of $1000. or more) are:

Peter R. Barnett, M.D.
Gerald J. Becker, M.D.
Patrick J. Carolan, M.D.
Robert L. Fisher, M.D.
Gary E. Friedlaender, M.D.
Richard L. Froeb, M.D.
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Herbert S. Pasternak, M.D.
Richard Pelker, M.D.
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Pedro A. Romero, M.D.
Francis P. Saunders, M.D.
Steven F. Schutzer, M.D.
Wayne O. Southwick, M.D.
Gordon A. Zimmermann, M.D.
Norman A. Zlotsky, M.D.

These leaders and the other contributors throughout the state, have clearly shown that Connecticut orthopedic surgeons are willing to support the private funding of orthopedic research. This is particularly important in an economic climate when public research grant money is rapidly diminishing. They are to be congratulated.

John F. Raycroft, M.D.

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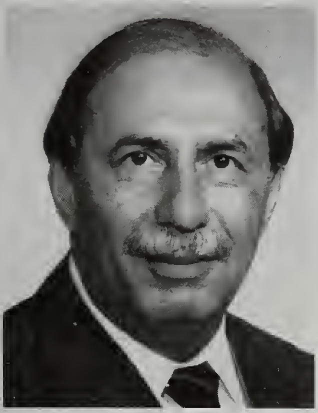
The CSMS Role in Continuing Medical Education



At the very beginnings of medical society formation in our state some two hundred years ago, medical education was a primary mission for the new organizations. In an age when no medical schools existed on this side of the Atlantic, it was vital that reputable physicians stay in touch with each other, share their skills and discoveries, and train new practitioners of the art in accordance with Hippocratic ideals. Thus it was that Col. Leverett Hubbard, in his inaugural address as first president of the New Haven County Medical Association on February 2, 1784, solemnly charged his colleagues: "I should prescribe. . .that PEACE, BROTHERLY LOVE, and KNOWLEDGE in the ART of HEALING may florish, so as to exceed any of the renown'd SOCIETIES of the same DENOMINATIONS in Europe."

In order to convince a cynical, distrustful state legislature to look kindly upon a bill to charter a statewide medical society after two previous setbacks, the leaders of the new medical society published in 1788 a volume called *Cases and Observations,* the very first medical transactions to be published in America. It was well received both at home and abroad, and a library was established with the books received in exchange for the publication. This new prestige stood the petitioners well when in 1791 they again requested the legislature to charter a state medical society. In 1792, with the participation of physicians from all eight counties, they were finally crowned with success.

Once established, the new state medical society lost no time in developing a system of examination and licensure to regularize the medical credentials of applicants, and in annually proposing "honorary prize questions" for discussions and dissertations to be published to the membership. By the 1811 convention, "Articles of Union between the Medical Society and Yale College" were to be printed up. As a relic of these days, CSMS still retains the authority to award honorary M.D. degrees, the most recent one having been granted to Norman Cousins on the occasion of his address to the Bicentennial Convention of the New Haven County Medical Association in 1984.

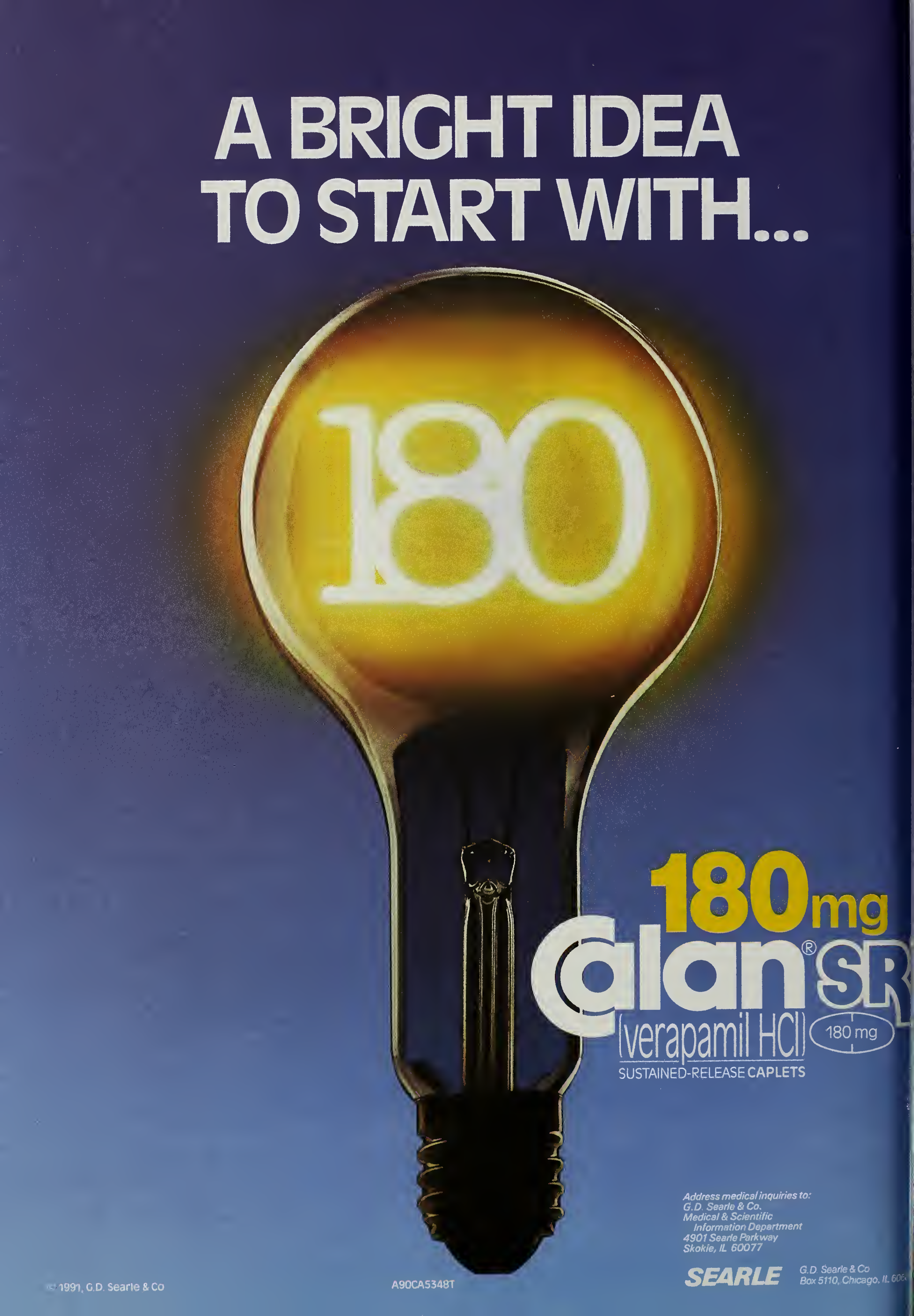
Over the years, the roles of medical education, apprenticeship, licensure, public health, and hospital standards have gradually passed over to the universities, governmental agencies, and national consortia such as ACME, ACGME, and JCAHO. Even the function of continuing medical education (CME), long the nearly sole province of the state and county medical societies during most of their history, has been relegated to the national and state specialty societies, since the dominance of certification. But with rapid turnover of new knowledge, and with the standardization of the retrospective audit, peer review activities, and quality assurance monitoring, the medical staff organization of the community hospital has become the most *common* source of CME for most physicians. The Society's own direct sponsorship of CME is now reduced to a few programs on Sports Medicine, Geriatrics, Worker's Compensation issues, and CME design. Even the CSMS Annual Scientific Assembly is no more.

However, a little-known but constant educational activity of our State Medical Society still goes on more vigorously than ever. It is the accreditation of hospitals and organizations as sponsors of continuing medical education (CME) provided within our state. CSMS is in its second four-year term of "Recognition" as an intra-state agency of CME accreditation by the national Accreditation Council on CME (ACCME), successor to the system pioneered by the AMA in 1968 in connection with the AMA Physician's Recognition Award. Only accredited CME sponsors may offer "Category I" CME, which meets the educational standards of the AMA and of the many specialty societies and hospital staffs having CME requirements. At present, 47 Connecticut hospitals and organizations are accredited by CSMS; an additional eight, including the two medical schools, enjoy direct accreditation by ACCME as national CME sponsors.

This work of guaranteeing an accountable system of quality CME to benefit Connecticut's physicians and their patients is carried on by the Society's Committee on CME, and by many physicians and lay educators. They volunteer their time and skills in making site visits in CSMS CME survey teams to the hospitals where Category I CME is offered to physicians.

In the sophisticated world of 1990's CME, the Society continues to fulfill its age-old mission: "To contribute to the diffusion of true science, and particularly the knowledge of the healing art." (*CSMS Charter, enacted May 10, 1792*).

Mehdi S. Eslami, M.D.
President



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REFLECTIONS ON MEDICINE

A New Postwar World?

ROBERT U. MASSEY, M.D.

WARS, at least when seen in retrospect, denote discontinuities in an otherwise seamless course of events. Both the American Civil War and the Franco-Prussian War marked the industrialization of the West, and in America the end of a predominantly agrarian way of life. In ways too complicated to analyze one world ended and another began when Imperial German forces violated Luxembourg at Trois Vierges on 1 August 1914. For those of us whose childhood and early adult years were lived before 1939, the world since 1945 has seemed an almost alien place. I recall listening with a few house officers in 1947 to Edward R. Murrow's *I can hear it now,* on a portable phonograph in the chief resident's office; for the first time we felt with surprise how our world had changed during those 13 years between the election of Franklin Roosevelt and the bomb dropped from the *Enola Gay* over Hiroshima.

The 1960s and Viet Nam are much too close, and the consequences too tangled, for most of us to think about comfortably, or to analyze with confidence. But now, what about the Desert Storm? Was that conflict released, in part, because of the collapse of Marxism in Eastern Europe, the dissolution of the Soviet Empire, and the new economic and political order in Europe? Or is it just another of those age-old, East-West contests, a continuation of ancient battles that began with the Persian Wars in the fifth century B.C., ran through the crusading centuries, precipitated the collapse of the Eastern Empire in the fifteenth century, and brought the Turks to the gates of Vienna in the seventeenth? Everything is related, of course, and this war, in which no punches have been pulled, should be no long, drawn out affair. It must, nevertheless, have consequences for us and for the world that will affect politics, economics, art, and literature for decades to come.

More to the point, what does this war augur for medicine? The possibility of chemical and biological warfare, environmental pollution, perhaps even radioactive fallout from smashed reactors or the detonation of nuclear devices, are eventualities that medicine has had to prepare for. Perhaps more important is the prospect of diseases that inevitably develop in both military and civilian populations when wars drag on. War has always been a time of change for medicine, although not demonstrably a time for medical progress. Most scientific progress occurs in peacetime, but applications may be enhanced by the contingencies of war. Perhaps more important, "... [war] serves as a precipitating factor in the establishment or reorganization of agencies and institutions that leave a permanent mark on civilian health and welfare."[1]

We may, now that hostilities have ceased, recognize once more our responsibility to assist with the development of health-care facilities and manpower training in the lands devastated by war. We are left with a compelling moral obligation to the peoples of the Middle East, and with that a reemergence of concern for health, education, population control, and the environment everywhere in the world.

Wars deflect the course of history, or rather, sharp deflections in the course of history are often accompanied by warfare; cause and effect are not easily sorted out in human events. We should, therefore, anticipate changes not only abroad but at home. In medicine we should take the lead in creating and seizing opportunities for physicians, hospital administrators, business leaders, and government representatives to examine proposals for systemic change in the provision and financing of medical care. With the ending of hostilities change will be in the air, a propitious time for new beginnings.

Economic recession may also be on the side of change helping us to rethink the way we do things, even tempting us to throw out old proposals that, though never tried, have now gone stale on the shelf. In hospitals and medical schools it is refreshing to hear already of serious plans to simplify operations and even reduce services, to eliminate bureaucracies that have been allowed to grow into useless dotage simply because no one would dare argue the necessity to shut them down. We may even hear the voice of the old lord chancellor, Francis Bacon, from across four centuries:

> I yearn for some secret initiation which, like the coming of April or of Spring, might avail to thaw and loosen your fixed and frozen minds.[2]

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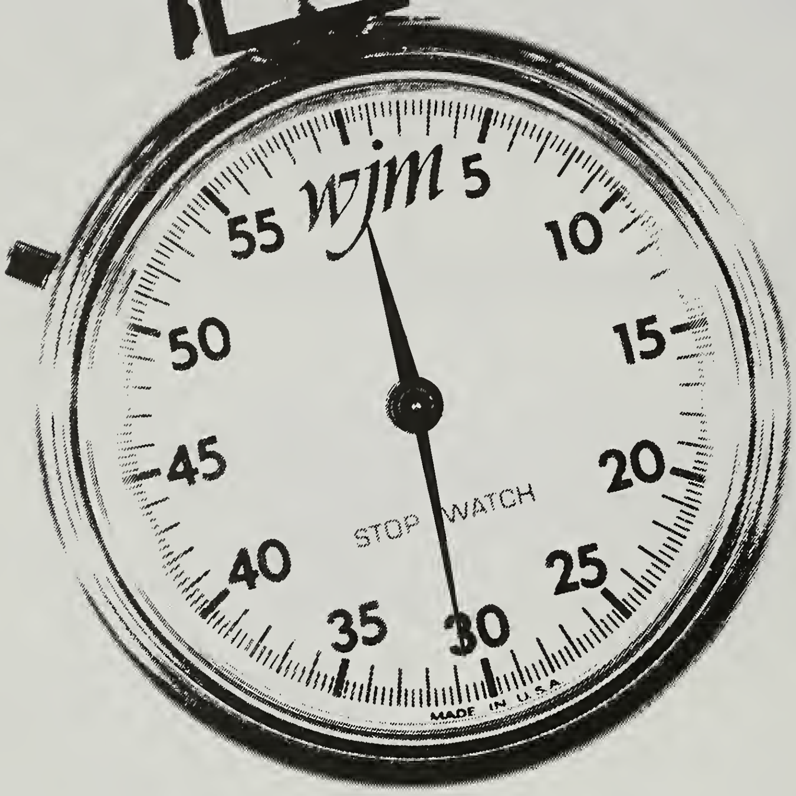

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After *Cruzan* in Connecticut: Controlling Overtreatment

JOSEPH M. HEALEY, J.D.

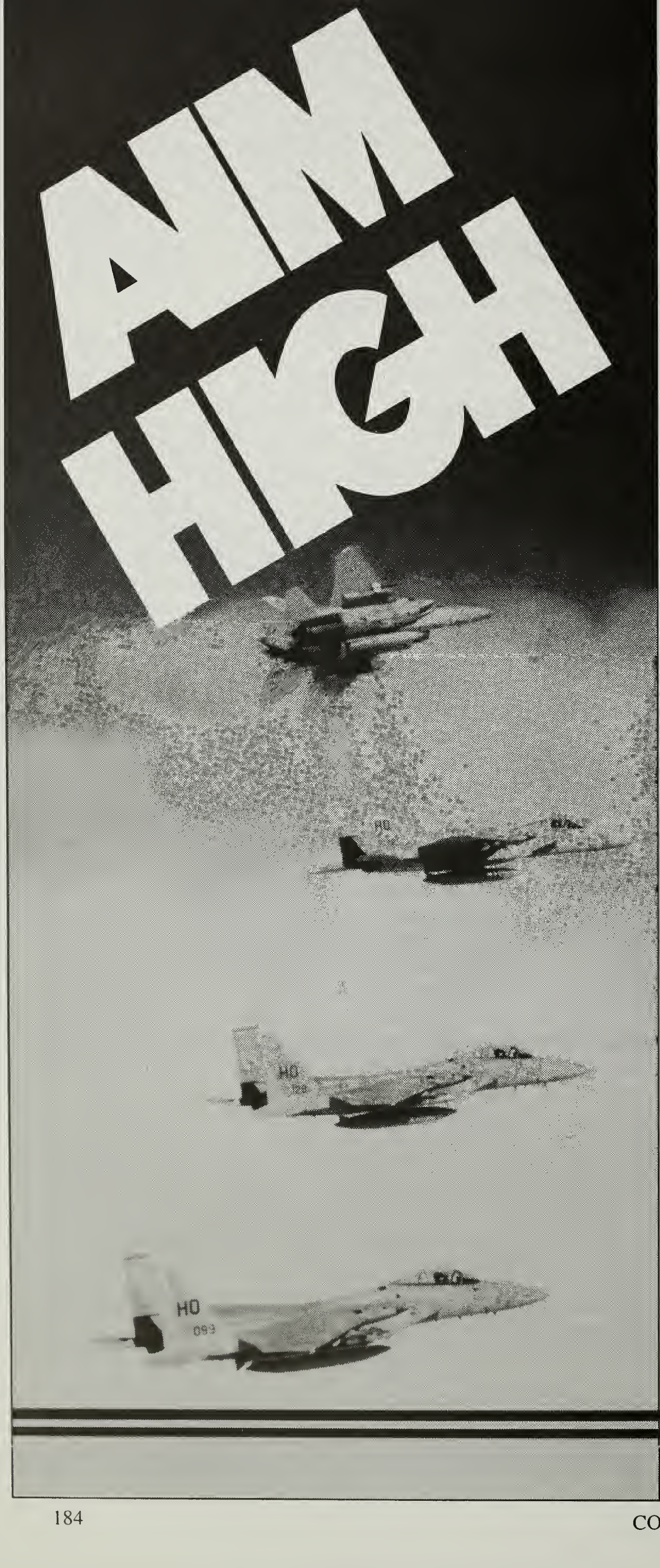
FEAR of undertreatment—the withholding or withdrawing of beneficial therapy from a patient with the intent of causing or allowing death to occur earlier rather than later—has driven the public policy debate about decisions at the end of life in Connecticut. This fear involves a legitimate area of concern and any compassionate, comprehensive policy addressing dying and death must deal with the possibility of unjustified, premature death. However, undertreatment is only part of the problem. Fear of overtreatment—the initiation or continuation of nonbeneficial therapy for patients with no reasonable likelihood of recovery or survival—represents an increasingly encountered, legitimate area of concern that is replacing undertreatment as the greater worry of many Americans. The *Cruzan* case provides a state like Connecticut with an opportunity to reexamine its unbalanced policy and to develop strategies to prevent overtreatment as well as undertreatment.

The foundation should be clarification of the roles, rights, and responsibilities of the patient, the family member or surrogate decisionmaker, and the physician. In light of the United States Supreme Court's decision in *Cruzan*, patients should be encouraged to identify in advance the general principles they would wish to influence decisions that would have to be made if they were incompetent and should give detailed guidance if there are specific situations in which they wish definite courses of action to be followed. Patients should also identify a family member or friend to serve as their surrogate decisionmaker. The wishes of the patient as expressed by the patient or as understood and expressed by the surrogate should be one starting point of the decision process. Physicians have the responsibility to assure that an accurate diagnosis and prognosis are known, understood, and incorporated into the decision process. In this role, the physician serves as a patient advocate, permitting the surrogate a wide range of options, while resisting conduct contaminated by conflicts of interest or conduct clearly detrimental to the patient's wishes or interests.

In the zeal to prevent undertreatment, a restrictive view of these roles, rights, and responsibilities has dominated some medical and some legal thinking. Three major areas of confusion remain and deserve clarification: (1) whether surrogates deriving their authority from conservatorship, guardianship, powers of attorney, or from their status as the next-of-kin possess the full range of rights as the patient for whom they serve as surrogate; (2) whether the physician has the duty to follow the wishes of the patient even when they are judged by the physician to be excessive and unrealistic; (3) whether artificial nutrition and hydration should be treated as essentials of life to which all are entitled or as forms of medical intervention whose use is to be determined in the same manner as other forms of medical treatment. To assure that overtreatment as well as undertreatment is avoided, it is necessary to expand the limited view of the roles, rights, and responsibilities beyond that which considers undertreatment the only danger to be avoided in end of life decisions.

Discussion of these issues will conclude in next month's column.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.



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AIR FORCE

MEDICAL NEWS CAPSULES

The Month's Reading in Review

TIMOTHY B. NORBECK

AGGRESSIVE lobbying by the AMA (with help from CSMS and our county medical and specialty societies) helped to pry loose approximately $75 million of the Medicare contractor contingency fund for funding of Medicare claims. . . .without the release of those funds, Medicare claims reimbursement to physicians could have been delayed up to two months.

- Three out of five patients recently polled in a survey by Parkside Association (Ill.) said they had received excellent care while in the hospital. . . .Some 71% of patients said their doctors had provided excellent care compared to 65% which gave that rating to their nurses.
- Smokers who lie about their habit on life-insurance applications may end up having no coverage at all. . . .That is the ruling of a federal appeals court in Philadelphia, which is allowing New York Life Insurance Company to avoid paying a claim in such a case—even though the policyholder died of a nonsmoking related cause.
- The number of state mandates requiring coverage of particular services of "providers" grew by about 50 a year during the late 1970s and early 1980s. . . .The total stood at 48 in 1974, rose to 472 by 1982, and now exceeds 700. . . .Mandates play a significant role in escalating health care costs, and covering merely the treatment for substance abuse increased group plan premiums 8% for individuals and 6% for dependents.
- A *Medical Economics* Continuing Survey suggests that the cost of running a medical practice jumped by 19.8% in 1989 from 1988, the largest one-year increase during the 1980s. . . .By comparison, the Consumer Price Index rose just 4.6%.
- The New York-based benefits consulting firm, A. Foster Higgins & Co., reports that in 1990 health care costs for the companies it surveyed jumped an average of 21.6% from 1989. . . .Reasons for the rise include "large catastrophic-illness claims, an increased use in substance abuse benefits, and widespread increases in the number of procedures such as lab tests."
- The lifetime odds of men developing prostate cancer is one in 11 and rising (according to the American Cancer Society). . . .The number of new prostate cancer cases rose 46% between 1973 and 1987. . . .While the risk factors include dietary fat and job exposure to cadmium, the rise in cases is mostly due to the growing number of men over age 65. . . .More than 80% of cases are diagnosed in patients after reaching that age.
- California urologist Ralph White, M.D., says prostate cancer is responsible for 21% of all male cancers but the National Cancer Institute spends only 2% of its budget for all urological cancers.
- The American Cancer Society has revised its estimate of a woman's lifetime risk of breast cancer—from one in 10 to one in 9—pointing to an even greater need for early screening. . . .A major problem is that only 30% to 35% of women have routine mammograms.
- Health access for the poor and uninsured heads the list of important health issues cited by state legislators across the country. . . .An AMA survey reports that nearly 42% of the 782 respondents identified cost and access as the top issues. . . .At 15% concern about AIDS was the next most important issue.
- With respect to the debate over congressional term limitation, it is interesting to note that Roger Sherman, Connecticut's delegate to the 1787 Constitutional convention, cautioned that long-term office holders "would acquire the habits of the place [Congress] which might differ from those of their constituents."
- The National Governors' Association health reform task force has filled the five vacancies on its 14 member panel. . . .Connecticut Governor Lowell Weicker has joined the group along with Lawton Chiles (D-FL), James Florio (D-NJ), and Ann Richards (D-TX), Pete Wilson (R-CA), and John Engler (R-MI). . . .The task force is expected to submit a draft by mid-April and a final report by August.
- In perhaps the ultimate case of "working the system," the owner of a California carpet foam company injured himself in a mixing machine that he had designed. . . . His company's attorney advised him that he may have a claim for personal injury, and an attorney was hired for the company to defend it. . . .Upon the advice of the company's attorney, the Board of Directors (the owner excluded himself) agreed to settle out of court for $122,500. . . . Because it was compensation for injuries sustained, the owner didn't have to pay any taxes on the amount—and the company deducted it as a business expense!

TIMOTHY B. NORBECK, Executive Director of the Connecticut State Medical Society.

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Dosage and Administration: Experimental dosage reported in treatment of erectile impotence.^{1,3,4} 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.^{3}

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References:

1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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From the Executive Director's Office

CALL

ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1991 Annual Meeting of the House of Delegates will be held at the Ramada Inn, 275 Research Parkway, Meriden. The meeting will commence at 11:00 A.M. on Wednesday, May 8 and will continue until all business has been concluded.

11:00 Call to Order
Mehdi S. Eslami, M.D., President
Kenneth M. Robbins, M.D., Speaker of the House
Marjorie G. Petro, M.D., Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society provides that:

Resolutions may be introduced by any Active, Life Member, Student Member of Postgraduate Physician Member of The Society, in compliance with the following provisions.

a. *All resolutions, reports and similar items of business submitted in writing and received at the office of the Executive Director not later than thirty days before the date scheduled for that meeting shall be considered as regular business of the House of Delegates.*

b. *Component county associations or the Student Member or Postgraduate Physician Member Associations whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after the close of such meeting in which to submit resolutions, reports and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.*

c. *Reports, recommendations, resolutions or other new business may be presented to the House of Delegates by the Council of The Society at any time and shall be considered as regular business.*

d. *Any business which does not qualify as regular business in accordance with the foregoing provisions may be accepted for consideration by a majority vote of the delegates present and shall be referred at once by the Speaker to a reference committee. When business is introduced under the provisions of this paragraph the vote shall be taken without debate, except that the introducer shall be allowed not more than two minutes to explain why it should be considered as regular business.*

COUNCIL MINUTES

Wednesday, February 27, 1991

ATTENDANCE

Present in addition to the Chairman, Dr. Joseph C. Czarsty, were Drs. Ahamed, Beck, Blum, Brooks, Dardick, Deren, Eslami, Fox, Freedman, Hollister, Kamens, McDonnell, Meridy, Orphanos, Redmond, Reyelt, Robbins, Sosa, Wetstone, Zanker, and Zeppieri.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Garofalo, Ms. Ballou, Mr. Tomat (FCMA), Mr. Fiorentino (HCMA), and Mr. Freberg (NHCMA).

Absent were: Drs. Bobruff, Chmieleski, Cottle, Franklin, Intravia, Keating, Lesnik, Parikh, Petrie, Petro, Sadowski, Van Nostrand, Welch and Wolfson.

Reports on Related Organizations

CPRO: Edward Kamens, M.D. gave an update on CPRO activities which included a discussion of future plans where methodology for computerizing reviews would involve charts being read by computers.

Report of the President

Dr. Eslami commented that the General Assembly had opened on January 9th and would close on June 5, 1991. The main thrust this year would be the budget, however, it could be reported that many new bills would be introduced and that the bills in which CSMS had an interest in two years ago would also all be back for discussion, i.e., the chiropractor bill, physical therapy bill, triplicate prescription, mandatory assignment, etc. A new bill concerning physician health will demand attention.

It was further reported that a field hearing was held in Connecticut on February 25, 1991, which was attended by Congressman Stark and Congresswoman Kennelly on the subjects of "Access and Cost of Healthcare". Appearance at the hearing was by invitation and CSMS was not invited to participate, however, labor, CBIA, Industry, state employees and unions were invited. Kyle Ballou, from the CSMS staff, attended as an observer and reported that there were four different panels, one on hospitals, one on insurance, one on industry and the last one on health access in Connecticut. She reported that nothing really new came out of the hearing and that they discussed policy and the financial situation in Connecticut and what Connecticut Health Access in Connecticut is doing. Several members of the committee holding the hearing left before the last panel was heard.

Dr. Eslami reported that Susan Addis had replaced

Frederick Adams, D.D.S. as Commissioner of Health. Susan Addis has a Masters Degree in Public Health from Yale and has been working for the Department of Public Health and has been District Health Director of Hamden. He hoped to arrange a meeting with Commissioner Addis in the near future to discuss matters of mutual interest.

It was further reported that the CSMS office had obtained the desk top publishing computer which had been authorized and that the staff was investigating various means of updating the present computer system.

Dr. Eslami read a letter which he had received from the U.S. Air Force which stated that any physician wishing to join the Air Force in any capacity, would have their enlistment handled expeditiously. He also asked the councilors to read the material that had been left at their places concerning "Operation Desert Plaque" which was being operated by the New England dentists which is pursuing leftover dental supplies and forwarding them to a regional group embarkation point. Physicians could make contributions to the Veterans of Foreign Wars, Veterans Hospital, Rocky Hill, Ct. 06067, Tel: D. Romano - 721-9573 for any additional information as to the type of supplies that could be used.

It was VOTED to receive Dr. Eslami's report as information.

Report of the Executive Director

Mr. Norbeck reported on the following items:

Pamphlet Distribution: To date, CSMS has received requests for 25,000 kits and that outside financing was being investigated to cover the cost of possible additional reprints and increased mailing costs.

Speaking Engagement: He was invited to participated in a Healthcare rationing seminar sponsored by the New London County Medical Association on Tuesday, March 19.

Mandatory Assignment: Mandatory assignment was going to be a major issue again in Connecticut and in at least eight other states. The measure proposed in Ohio no longer is tied to licensure and has a chance for passage. The Blues have testified in favor of it. In New Jersey, there are two bills, one which was reported out of committee has a means of test of $34,000 for a single person and $41,000 for a couple. The other bill provides for no means test.

AMPAC Workshop: AMPAC is presenting a workshop beginning at 8:00 A.M. immediately prior to the House of Delegates meeting on Wednesday, May 8 at the Ramada Inn, Meriden. A continental breakfast will be provided at 7:30 A.M. The seminar is usually a full day seminar which will be compressed into three hours. It has had rave reviews in other state medical societies and those who would like to attend should pre-register with the CSMS office. There is no charge for the seminar.

Indigent Care: Newly elected Florida Governor Lawton Chiles, or "Walking Lawton" as he is known because he traversed Florida on foot when he ran for the Senate, has announced his plan to fund indigent care by assessing each Florida physician $500 per year as part of his Maternal and Child Health Care bill. In Washington, DC, legislation is being proposed that physicians donate four hours monthly to the medically indigent.

Legislative Report

Dr. Wetstone, Chairman of the Committee on Legislation, reported that the main focus of the legislature is the $2.4 billion deficit and the Governor's income tax plan to alleviate it. CSMS issues that are still active include:

* direct access to patients by physical therapists
* chiropractors being team physicians
* optometrist use of therapeutic drugs
* psychologists being permitted to commit patients to mental hospitals
* requiring consulting physicians to get a patient's permission in writing before the consultation
* regulation and licensure of utilization review agents
* study by health care professionals of the possibility of all healthcare professionals giving an uncompensated day a month to the uninsured and underinsured
* requiring HIV+ employees to notify clients of their HIV status
* changing the Medical Examining Board to an independent hearing officer
* eliminating the ConnMAP program
* lowering the licensing fee for certain physicians
* regulating the hours of residents and interns
* various bills banning smoking
* various gun control bills

Dr. Wetstone announced the dates of the hearings on the various bills and reported that CSMS would be represented at the hearings. There was lengthy discussion concerning changing the Medical Examining Board to an independent hearing officer, and it was VOTED that Drs. Eslami, Wetstone, Deren, Ahamed and Dardick meet with Naomi Cohen to discuss the changes in the composition and operation of the Examining Board. It was VOTED to accept the report as information.

Report of AMA Delegations

Dr. Petrie, Chairman of the Connecticut Delegation, submitted a written report on the interim meeting of the AMA meeting held in Orlando. Since he was unable to be present, he requested Dr. Freedman to present the report. Dr. Freedman reported that one of the most important actions taken was to send a report back to the Board of Trustees on HIV with the suggestion that HIV be treated as an infectious disease and not a political problem. Two resolutions from Connecticut were acted upon. One resolution dealing with documenting and itemizing the degree to which erring physicians are reprimanded was passed with the approval of the Committee on Ethical and Judicial Affairs. The other resolution on the "Physicians Bill of Rights" was referred to the Board of Trustees for further study. A very strong stand was taken by the House that medical students should not be unnecessarily exposed to HIV and that medical schools should be responsible to exerting prudent and reasonable precautions for the students and that medical schools should have insurance to cover those students against all chronic illnesses. It was learned that medical schools do not have this insurance. It was further suggested that these same precautions should be applied to residents. Other items covered in the report were Finances (no dues increase in 1991), Denial of payment for pre-existing conditions, Use of animals in research in medical education, Drug Abuse, National Practitioner Data Bank, PRO notification of quality problems, etc.

Report of Subcommittee on Preliminary Study of Nominations

With a few amendments, it was VOTED to approve the report of the Subcommittee and to transmit the slate of nominees to the House of Delegates for the election with the Council's recommendation for approval. It was further VOTED to disband the Committee on Program of the Scientific Assembly, to increase the Editorial Board to 25 members and to eliminate the restriction of a five year term for delegates to state medical societies.

Nomination of CMIC Board of Directors for 1991

On February 6, 1991, the CMIC Nominating Committee met to review nominations for six directors to be elected by the membership in 1991. The following slate of director nominees was approved at that meeting and were recommended to the CMIC Board of Directors for their approval:

Hartford County: Richard Cobb, M.D. (radiologist)
William Schear, M.D. (obstetrician/gynecologist)

New Haven County: Marvin Fox, M.D. (internal medicine/gastroenterology)

Fairfield County: Neil Klein, M.D. (internal medicine/gastroenterology)

New London County: Robert Linden, M.D. (internal medicine/geriatrics)

Windham County: Stephen Leach (internal medicine)

In accordance with CMIC Bylaws, the names were reviewed by the Council and it was VOTED to approve the names as submitted.

Bylaw Amendments

At the last Council meeting, staff was instructed to prepare bylaw amendments eliminating the scientific assembly and mandated time of section meetings. It was VOTED to approve the amendments prepared by staff and to transmit them to the House of Delegates for action. In accordance with the Bylaws, these amendments will be placed on the table for action at the semi-annual meeting.

Report on Membership

Dr. Freedman, Chairman of the Membership Committee gave a progress report on membership and stated that CSMS is sending letters to all newly licensed physicians congratulating them on their licensure and informing them of the proper procedure to follow to become a member of the county and CSMS. Progress is being made in having all counties amend their bylaws to agree with CSMS and AMA as to requirements for Life Membership and dues reduction. Every effort is being made to promote unified membership between the county and state, however that has not been accomplished to date.

Life Membership

It was VOTED to receive as information the name of the following physician who was granted Life Membership as of 1/1/91:

Frank K. Abbot, M.D., Middletown (M)

Miscellaneous

Dr. Eslami informed the Council that he was having a meeting with the President-elect, Vice President, Speaker and Vice -Speaker of the House, Chairman of the Council and Dr. Zanker and Mrs. Lindquist for the purpose of discussing the rearrangement of the "Order of Business" of the House of Delegates so that the President's inauguration could take place earlier in the day.

Date of Next Meeting

Wednesday, April 3, 1991

N.B.:*The foregoing is a summary of the proceedings and actions of the Council on February 27, 1991. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*

IN MEMORIAM

ALBERT, MARVIN, Tufts, 1957. Dr. Albert was an anesthesiologist in the New Haven County area since 1964. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 27 October 1990 at the age of 61.

BONNER, GEORGE A., University of Vermont, 1945. Dr. Bonner was an obstetrician and gynecologist in the New Haven area since 1950. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 30 November 1990 at the age of 69.

BULLEN, HALSEY G., University of Pennsylvania, 1941. Dr. Bullen was an otolaryngologist in the Fairfield County area since 1951. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 26 November 1990 at the age of 75.

COHEN, WILLIAM, Yale, 1923. Dr. Cohen was an internist in the New Haven County area since 1923. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 3 December 1990 at the age of 90.

FRANCIS, HENRY, SR., Howard University, 1948. Dr. Francis was a general practitioner in the New Haven County area since 1951. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 11 June 1990 at the age of 67.

GIULIANO, SEBASTIAN J., Tufts, 1930. Dr. Giuliano was a general practitioner in the Hartford County area since 1932. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 15 September 1990 at the age of 86.

HUNKEMEIER, EDNA H., New York University, 1933. Dr. Hunkemeier was an anesthesiologist in the Fairfield County area since 1933. She was a member of the Fairfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 6 January 1991 at the age of 94.

KEEFE, RAYMOND S., Boston University, 1925. Dr. Keefe was a general practitioner in the Hartford County area since 1926. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 25 December 1990 at the age of 93.

LAVIETES, PAUL H., Yale, 1930. Dr. Lavietes was an internist in the New Haven County area since 1933. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 27 December 1990 at the age of 83.

LORINCZ, LASZLO J., Tufts, 1979. Dr. Lorincz was a family practitioner in the Fairfield County area since 1981. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 6 December 1990 at the age of 38.

MARINO, FRANK S., University of Maryland, 1942. Dr. Marino was an obstetrician and gynecologist in the Hartford County area since 1943. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 20 October 1990 at the age of 74.

MARSHALL, CHARLES R., University of Michigan, 1978. Dr. Marshall practiced physical medicine and rehabilitation in the Fairfield County area since 1982. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 27 September 1990 at the age of 39.

MCDERMOTT, JOHN F., Cornell, 1923. Dr. McDermott was an orthopedic surgeon in the Hartford County area since 1925. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 22 December 1990 at the age of 86.

ORLOWSKI, ANDREW W., Tufts, 1936. Dr. Orlowski was a general practitioner in the Litchfield County area since 1937. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 23 November 1990 at the age of 83.

RAFKIND, A. BENJAMIN, University of Paris, 1937. Dr. Rafkind was a general practitioner in the Middlesex County area since 1942. He was a member of the Middlesex County Medical Association and the Connecticut State Medical Society; died 13 November 1990 at the age of 81.

RIORDAN, WILLIAM D., New York School of Medicine, 1943. Dr. Riordan was an obstetrician and gynecologist in the New Haven County area since 1946. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 10 November 1990 at the age of 76.

WILSON, GEORGE C., Yale, 1928. Dr. Wilson was an internist in the New London County area since 1932. He was a member of the New London County Medical Association and the Connecticut State Medical Society; died 28 December 1990 at the age of 88.

WRONA, EUGENE A., Hahnemann, 1943. Dr. Wrona was a general practitioner in the Fairfield County area since 1946. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 23 July 1990 at the age of 72.

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities **should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203)-865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities*.**

Physicians wishing to locate **in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

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Heterotopic Pregnancy Involving the Ovary and Uterus Following Ovulation Induction: Diagnosis and Management

NICHOLAS STROUMBAKIS, M.D. AND MORTON G. FELDMAN, M.D.

Introduction

IN the past 50 years, 16 cases of heterotopic pregnancies involving the ovary and uterus have been reported.[1-16] Prior to this period, four such cases were alluded to but not described.[2] Heterotopic pregnancies, though rare events, are more than medical curiosities, for the proper diagnosis and management of this condition can be lifesaving to the mother and fetus.

Heterotopic pregnancy is defined as an intrauterine and ectopic pregnancy occurring simultaneously. The common risk factors associated with combined pregnancies include pelvic inflammatory disease, previous gynecologic surgery, intrauterine contraceptive devices, and diethylstilbestrol exposure.[17] Ovulation induction followed by artificial insemination is an additional risk factor that has been recently observed.[18-19]

This report describes the presentation and management of a patient with heterotopic pregnancy following hormonal treatment for ovulatory failure. This is the 17th documented case of a simultaneous intrauterine and ovarian gestation. It is also the first reported case of a heterotopic pregnancy involving the ovary and uterus following ovulatory induction and artificial insemination. The following case study and literature review reveals that an awareness of such an occurrence by the patient's physician will lessen the danger to the mother's life and foster a normal full-term delivery.

Case Report

A 31-year-old white female, gravida 1, para 0, was first seen in the emergency room and admitted to the hospital with diffuse lower abdominal pain that had been present for 12 hours. The pain was constant and became more severe, eventually radiating to both shoulders.

The patient reported a history of infertility associated with oligo-ovulation secondary to polycystic ovarian disease. No history of pelvic inflammatory disease or previous ectopic pregnancy was reported. She had an irregular menstrual cycle. Her last menstrual period had been nearly two months prior to her emergency room visit. Desiring to become pregnant, she was being treated in an infertility clinic. Seven weeks prior to admission, the patient underwent an initial ovulation induction treatment regimen consisting of four ampules of human menopausal gonadotropins (HMG)* for a five-day cycle. During this period, an ultrasound examination showed no follicles, and the prescribed dosage of HMG* was increased to six and then to eight ampules per day. A repeat ultrasound, two weeks later, revealed two right ovarian cysts, each measuring 1.7 cm and three left ovarian cysts measuring 1.4, 1.7, and 1.1 cm respectively. A day later, a second ultrasound was obtained. 20,000 IU of human chorionic gonadotropin (HCG)** was administered and the patient was artificially inseminated. On three occasions, about one week apart, the ß-HCG levels were 343, 1,900, and 20,000 mIU/ml respectively. A third ultrasound was obtained one week prior to admission and revealed a single intrauterine fetal pole with a 2.7 cm left ovarian cyst.

On admission examination, the patient, while not in shock, was pale and anxious. Her blood pressure was 130/60 mm Hg, pulse 84, respirations 30, and temperature 37.6 C. Because of her obesity, no masses were discernable on abdominal examination. The abdomen did not appear distended but there was diffuse guarding with rebound tenderness in the right lower quadrant. Bowel sounds were hypoactive. The uterus and adnexa could not be assessed because of the patient's obesity and pain. The cervix was closed and no blood or discharge was noted in the vagina. Rectal examination revealed no fullness in the pouch of Douglas. Stool samples were heme positive.

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*Supplied as Pergonal. Serono Laboratories, Inc., Norwell, Mass.
**Supplied by Legere Pharmaceuticals, Scottsdale, Ariz.

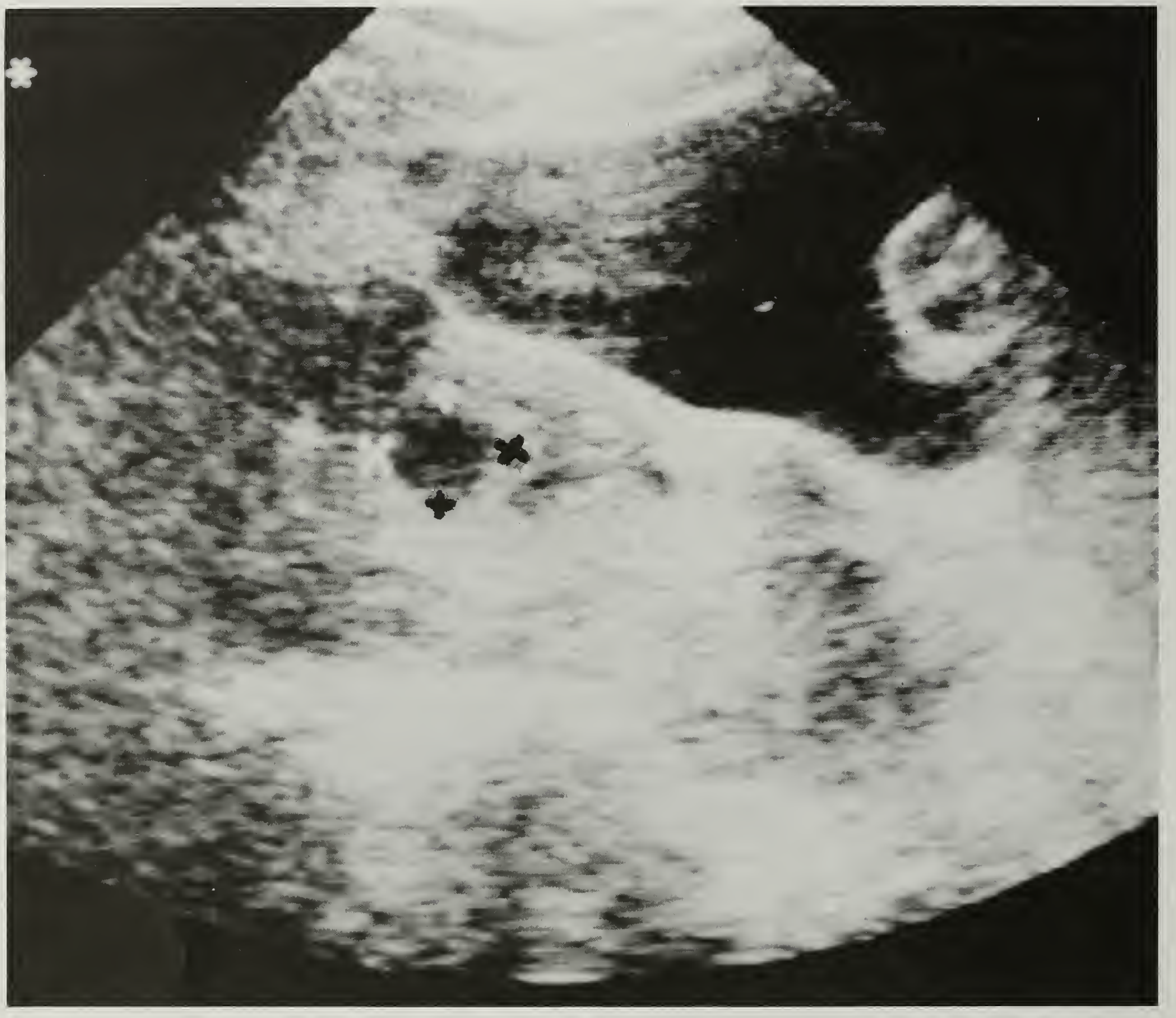

Figure 1
Emergency Ultra-sound: Yolk sac (marker) corresponding to 6.3 weeks gestation

Laboratory data revealed a hemoglobin of 11g%, hematocrit of 32.1%, white blood cell count of 22,600/mm with a differential count of 81 segmented forms, 2 bands, and 6 lymphocytes, and a normal platelet count. A Foley catheter was inserted and clear yellow urine obtained. A pregnancy test was positive.

An ultrasound examination of the pelvis and abdomen revealed the uterus to contain a gestational sac measuring 1.8 cm (Fig. 1). This corresponded to a gestation of 6.3 weeks. While no fetal pole could be identified, a yolk sac was clearly present. The right ovary appeared enlarged with an echogenic center measuring 6.1 x 4.3 cm. There was a moderately large amount of fluid in the abdominal cavity. The pelvis showed free fluid in the posterior cul-de-sac, extending posteriorly and superiorly above the upper uterine segment and into the flanks bilaterally (Fig. 2). The possibility of a loculated mass in the region of the appendix was noted (Fig. 3).

In view of the patient's symptoms and laboratory results, the differential diagnosis included appendicitis with perforation or a ruptured right hemorrhagic corpus luteal cyst with blood in the abdominal cavity. Because of its rare occurrence a heterotopic pregnancy was not immediately considered.

While the patient was being prepared for surgery with hydration and antibiotics, the blood pressure fell to 100/60 mm Hg. She was taken to the operating room for an emergency exploratory laparotomy. The abdomen was entered through a low mid-line incision. Hematoperitoneum was present and an active bleeding site was found in the right paraovarian area. The fallopian tubes and appendix were normal. The uterus was enlarged and ap-

Table 1
Summary of Reported Cases of Heterotopic Pregnancies Involving the Ovary and Uterus

Ref.	*Age*	*Length of pregnancy at time of presentation (weeks)*	*Error in diagnosis*	*Organs removed at surgery*	*Pregnancy course*
(1) 1937	28	8	+	Rt. ovary & tube	Full term
(2) 1951	?	14	+	Lt. ovary & tube	Full term
(3) 1953	32	4	+	Lt. ovary & tube	Full term
(4) 1955	18	8	+	Rt. ovary	Spont. abortion
(5) 1958	41	-	+	Post partum	Full term
(6) 1961	35	8	+	Rt. ovary & tube, appendix	Full term
(7) 1966	29	6	+	Lt. ovary & tube	Induced labor
(8) 1968	21	8	+	Lt. ovary & tube, appendix	Induced labor
(9) 1973	32	8-10	+	Rt. partial ovary & tube	Full term twins
(10) 1974	17	8	+	Rt. ovary & tube	Aborted
(11) 1974	36	6	+	Partial rt. ovary	VIP*
(12) 1975	32	32	+	Pelvic mass post delivery	Full term
(13) 1976	24	8	+	Lt. ovary	Aborted
(14) 1980	22	25	+	Postpartum exploration	Full term
(15) 1986	29	7 (Clomiphene)	-	Wedge resection lt. ovary	Full term
(16) 1990	40	38	+	TAH-BSO**	C-sect.
Present case	31	7 (ovulation induction + HMG + HCG + artificial insemination)	+	Oversewing bleeding site rt. ovary	Full term

*VIP (Voluntary Interruption of Pregnancy)

**TAH-BSO (Total Abdominal Hysterectomy-Bilateral Salpingo Oophorectomy)

peared compatible with a six-week gestation. The left ovary contained a 2 cm cyst, and a ruptured cystic area was found in the right ovary, the surface of which was actively bleeding. Hemostasis was achieved by a partial cystectomy and oversewing the bleeding site with 2-0 chromic sutures. The estimated blood loss during surgery was 750 ml and the patient required 1,000 ml of crystalloid. There were no hypotensive episodes or period of tachycardia during surgery. No frozen sections were obtained intraoperatively.

Postoperatively, the hematocrit was 22% and remained stable throughout the hospital course. The histological examination of the intraoperative specimen revealed blood clot and placental villi in incontinuity with ovarian tissue, consistent with an ectopic pregnancy. Three days after surgery, the patient's ß-HCG levels were 36,998, 43,245, and 61,473 mIU/ml. The patient was discharged on the sixth postoperative day. Follow-up outpatient transvaginal ultrasound examination revealed a normal fetal heart tone at six months of gestation. The patient's pregnancy progressed to a normal full-term delivery.

Discussion

Heterotopic pregnancy is a rare obstetric event. It is not surprising that since the introduction of ovulation induction and insemination unusual multiple pregnancies are occurring in greater than expected frequency.[18-19] The incidence of heterotopic pregnancies is 1:3,889 pregnancies,[20] of which ectopic ovarian pregnancy is reported to be about 0.9%.[21] The incidence of heterotopic ovarian pregnancies following ovulation induction has been reported to be as high as 1:100. Based on these data, the theoretical frequency of concurrent ovarian and uterine pregnancy following ovulatory induction and insemination would be about 1:10,000.

The two proposed mechanisms for heterotopic pregnancy following ovulatory induction are hyperstimulation of the ovaries, and tubal dysfunction caused by the hormonal stimulation. In the present case ovarian hyperstimulation is the more likely cause for the heterotopic pregnancy as both implants appeared to have occurred following artificial insemination. The second ultrasound examination following super-HMG stimulation revealed the presence of five ovarian cysts although two weeks prior no follicles were demonstrated. The process of superfecundation seems likely to have occurred the following day after the patient was given HCG and artificially inseminated. A direct relationship has been demonstrated between urinary estrogen levels and the rate of ectopic pregnancies in women receiving ovulatory drugs.[22-23] In addition, this change in hormonal imbalance effects the ciliary and smooth muscle function in the fallopian tubes, thereby increasing the risk of combined pregnancies.[23]

Table 1 summarizes all reported cases that have met Spiegelberg's criteria for heterotopic ovarian pregnan-

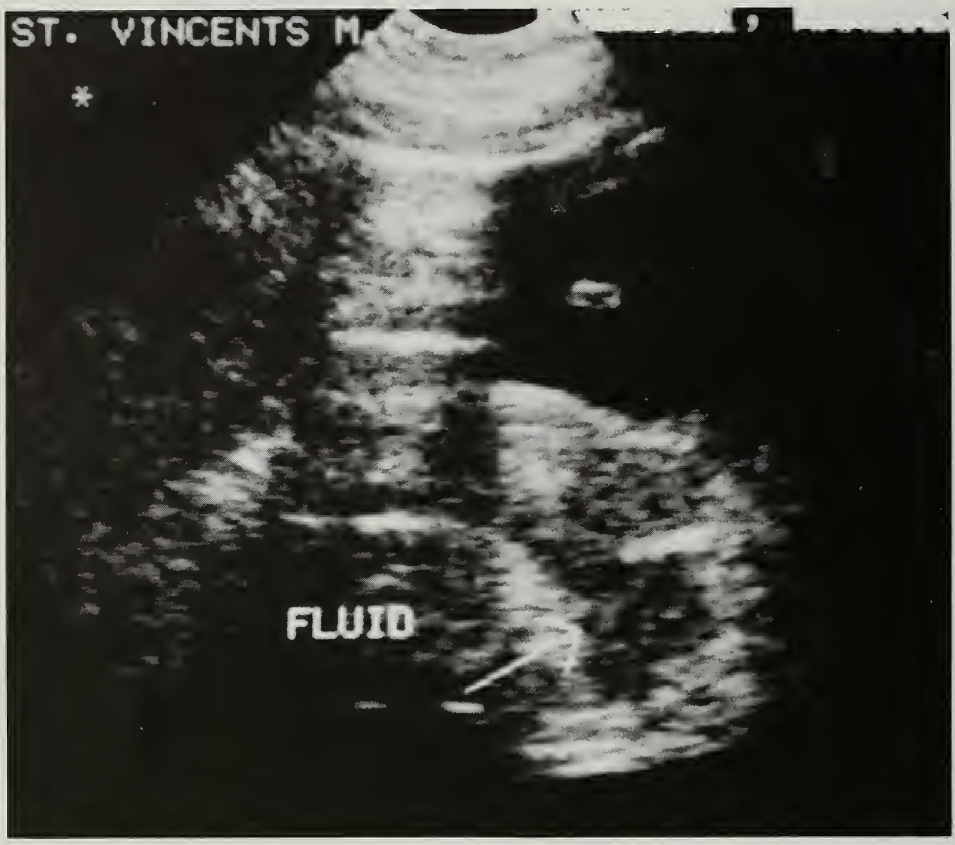

Figure 2
Emergency ultrasound: Moderately large amount of fluid in pelvic area.

cies.[24] As noted in two thirds of the cases reported, the acute onset of symptoms appeared by the sixth to eighth week of gestation. The correct preoperative diagnosis of heterotopic pregnancy in the antepartum was never considered. To aid in formulating a correct preoperative diagnosis the following criteria should be looked for:

1. History of ovulation induction and artificial insemination.
2. Acute onset of lower abdominal pain with or without vaginal staining.
3. A uterus compatible with a gestational age of at least four to six weeks.
4. Physical examination should reveal:
    a. Abdominal tenderness.
    b. Signs of peritonial irritation.
    c. Uterine and adenexal tenderness.
5. Culdocentesis showing blood, or ultrasound examination revealing fluid in the pelvis.

Preoperative studies should include an ultrasound examination which confirms the presence of a uterine gestation, a mass in the adnexa, and fluid in the abdomen. Screening laparoscopy is contraindicated in hemodynamically unstable patients for the diagnosis of ectopic pregnancy.[25]

Intraoperative management of the heterotopic ovarian pregnancy consists of minimizing operative time, and adequate and complete abdominal exploration, salvaging the ovaries, and obtaining hemostasis. In this case, a partial cystectomy and oversewing the surface bleeding of the right ovary was chosen. Because of the patient's long history of infertility, this procedure is recommended in an attempt to maintain a viable uterine gestation. The intraoperative diagnosis most commonly considered was that of a ruptured ectopic pregnancy or bleeding corpus luteum cyst. In the 17 cases reviewed, there were three uterine abortions but no maternal deaths.

Conclusion

This is the first reported case of a heterotopic pregnancy involving the ovary and uterus following ovulatory induction and artificial insemination in which mother and fetus progressed to a normal delivery.

Although rare, the differential diagnosis should include heterotopic pregnancy when a pregnant patient previously treated with ovulatory drugs presents with an acute surgical abdomen. In such cases, conservative surgical management should include an attempt at ovary preservation, control of hemorrhage, and maintainence of adequate maternal blood pressure. Major concern should be directed towards preserving both maternal and fetal life. This can be achieved with an awareness of this entity and proper management.

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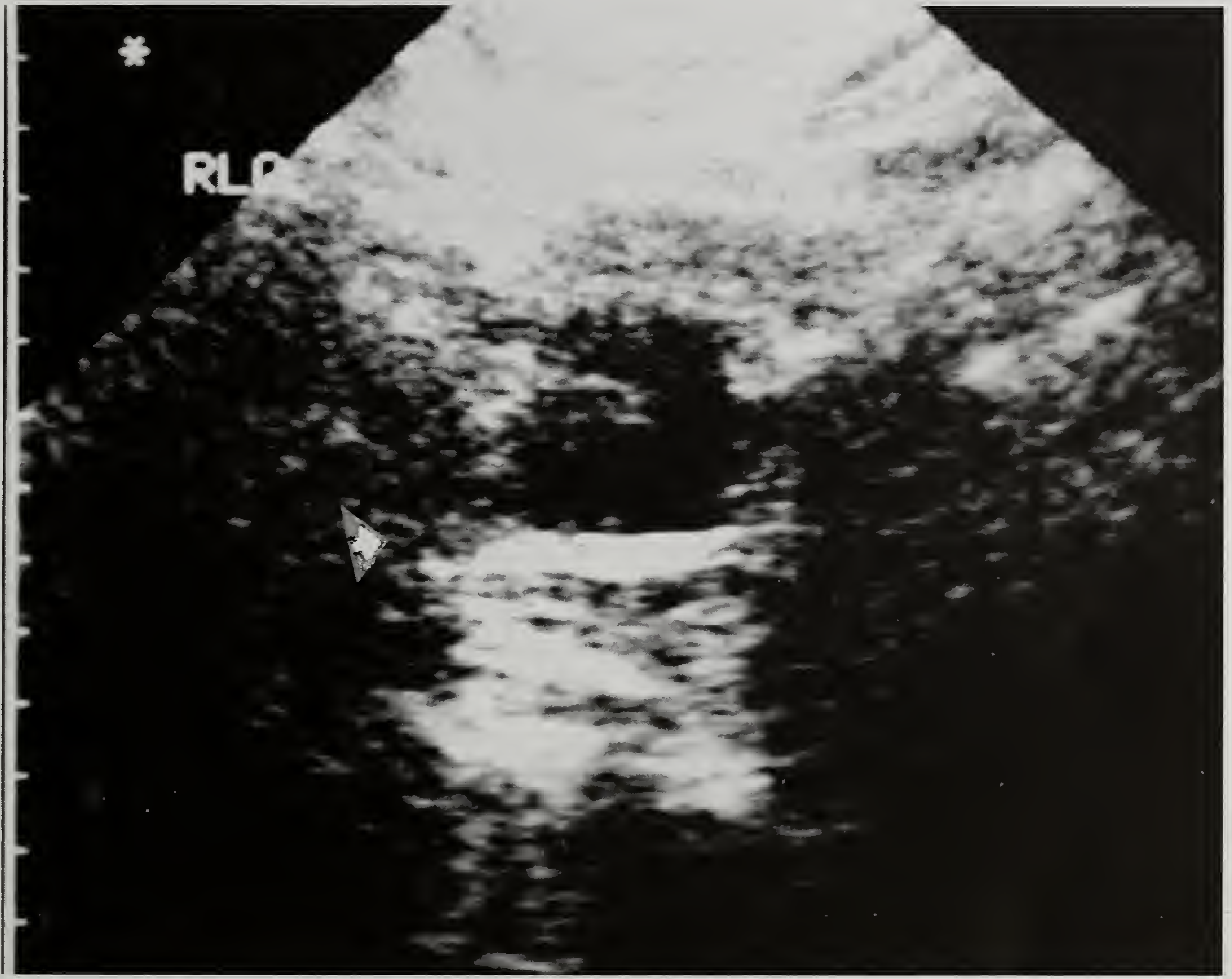

Figure 3
Possibility of a loculated mass in the (appendex) right lower quadrant.

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Dedifferentiated Liposarcoma with Features of Rhabdomyosarcoma

RICHARD P. SALZANO, JR., M.D., ZYGMUNT TOMKIEWICZ, M.D.,
AND WILLIAM A. AFRICANO, M.D.

ABSTRACT—We describe a case of recurrent dedifferentiated retroperitoneal liposarcoma with light microscopy features of rhabdomyosarcoma, the first such reported case. The tumor contains a pleomorphic pattern consisting of plump fusiform cells, tadpole cells, malignant appearing lipoblasts, and other nondescript bizarre cells. Of particular interest is a number of tumor cells with plump, bizarre nuclei which contain cross-striations of skeletal muscle pattern. The literature on dedifferentiated liposarcoma is reviewed, and the significance of this case in terms of a current model of mesenchymal differentiation is discussed, with particular attention to the postulate of a common precursor for a variety of soft-tissue tumor histologies.

Introduction

LIPOSARCOMAS are tumors which differentiate as adult or embryonic adipose tissue, are likely to recur locally, and metastasize in at least a small proportion of cases.[1] Liposarcomas are usually classified into four main subgroups: well-differentiated (WDLS), myxoid, round cell, and the pleomorphic form.[2] Evans in 1979 coined the phrase "dedifferentiated liposarcoma" for tumors which contain distinct areas of well-differentiated liposarcoma and of cellular spindle cell or pleomorphic sarcoma without recognizable lipogenesis.[3] The dedifferentiated areas have features of malignant fibrous histiocytoma (MFH) or just undifferentiated tumor cells, and have the appearance of a more primitive tumor. The present case report is the first, to our knowledge, to describe a recurrent dedifferentiated retroperitoneal liposarcoma with areas of cells containing cross striations of skeletal muscle pattern.

Case Report

A 60-year-old man was first admitted to the hospital in May 1981 with a two-month history of gradually enlarging abdomen and no other specific complaints. Surgical exploration revealed, in the retroperitoneal tissue from the pelvis up towards the kidneys, a 5.5 kg lipomatous mass which was completely removed. The pathological findings were those of a well-differentiated liposarcoma of the mesentery. The postoperative course was uneventful, and the patient received no adjuvant therapy throughout the course of his disease.

Eleven months later a lipomatous mass was removed from the patient's left inguinal canal during the repair of an inguinal hernia. The pathological diagnosis again was WDLS, and the histology of this tumor was similar to that of the previous mesenteric tumor.

The patient was admitted again in September 1986 for surgical debulking following recurrent abdominal distention. Exploratory laparotomy found multiple masses in the retroperitoneum behind the sigmoid colon, around the left kidney, within the mesentery of the small bowel, and on both sides of the rectum. Excellent debulking was achieved. Microscopic examination of the tumors disclosed a variegated pattern with areas of maturing adipose cells resembling a lipoma. There were also numerous groups of atypical cells with bizarre nuclei and vacuolated cytoplasm, as well as other areas where spindle cells were arranged in irregularly oriented bundles. It was noted that this recurrence had a greater proportion of less differentiated areas in comparison with the prior recurrence (Fig. 1).

Increasing abdominal girth and radiologic evidence of residual tumor in the pelvis and retroperitoneum prompted reexploration in December 1987. Surgery was technically demanding, and only palliative debulking of the retroperitioneal recurrences could now be accom-

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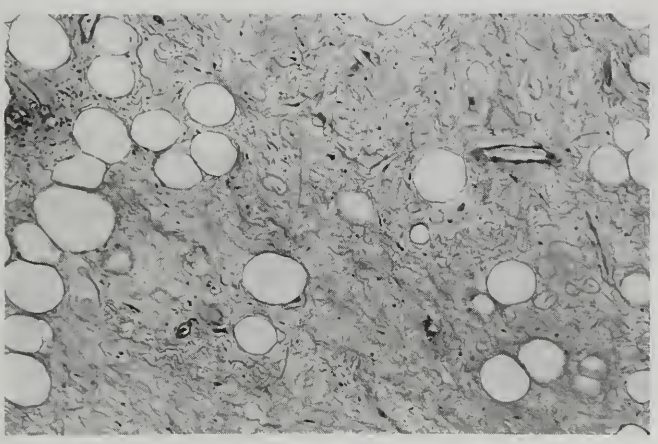

Figure 1
Early recurrence with a dominant pattern of WDLS and isolated dedifferentiated areas (H and E stain, 40x).

plished. Once again, light microscopy evaluation revealed a variety of histologic patterns in individual tumors, including WDLS with sclerosing patterns and areas of myxoid liposarcoma (Fig. 2).

A fifth surgical procedure in June 1989 was necessary for massive recurrence producing increasing abdominal girth, moderate left hydronephrosis, and compression of the inferior vena cava. The operative findings were of 26 separate tumor masses in the intraabdominal and retroperitoneal areas. In many areas, residual tumor was left in the tumor bed.

Pathological Findings

Twenty-six separate tumors were submitted for evaluation. The tumors represented variants of differentiated liposarcoma with variability from slide to slide. The dominant pattern consisted of WDLS in variants of sclerosing and myxoid liposarcoma. Four of the specimens had significant increased cellularity and pleomorphic tumor giant cells.

The most striking finding was a 280 g, 11 x 9 x 6 cm mass with a reddish-purple discrete capsule and yellow, firm parenchyma with partially necrotic areas. Light microscopy of a number of permanent sections revealed an extremely bizarre and pleomorphic pattern consisting of plump fusiform cells, tadpole cells, malignant appearing lipoblasts, and other nondescript bizarre cells (Fig. 3a). There were many tumor cells with large, bizarre atypical nuclei which clearly contained periodic cross-striations of skeletal muscle pattern (Fig. 3b).

Discussion

Evans's original series described eight cases of WDLS with areas of dedifferentiation.[3] There was a 100% rate of recurrence and a 25% rate of metastasis. Dedifferentiation had an associated decrease in median survival in this series; 59 months versus 119 months for WDLS.

Since Evans's first description, several series have reported the same phenomenon. Shimola et al found three of five recurrences of WDLS having areas of dedifferentiation, two resembling MFH and one resembling malignant mesenchymoma.[4] Hashimoto and Enjoji reported similar findings in four of five recurrences of WDLS with dedifferentiation to MFH.[5] In Snover's et al series of eight original tumors of WDLS, six recurrences showed changes in histological pattern, including MFH, hemangiopericytoma, and spindle cell sarcoma.[6] Bolen and Thorning's two cases of dedifferentiated liposarcoma resembled MFH and fibrosarcoma.[7] Hashimoto et al studied 63 cases of liposarcoma, six of which had areas of WDLS and poorly differentiated areas of MPH of fibrosarcoma.[8] Most recently, Azumi et al examined 14 recurrences of 21 original cases of retroperitoneal liposarcoma, five of which dedifferentiated with features of MFH.[9]

There are a number of similarities apparent in these series. All patterns of dedifferentiation represent progression of the tumor to a more primitive or anaplastic form; there was no evidence (as seen in this case) of transformation to another differentitated sarcoma. In most cases, the dedifferentiated pattern dominated the recurrence and resembled MFH, and, often, a diagnosis of liposarcoma would not have been made were it not for the histology of the original tumor. There is evidence that dedifferentiation implies a poorer prognosis;[3] however, some studies found this not to be true.[6,9] It is apparent that dedifferentiation is associated with an increased rate of recurrence.[3,9]

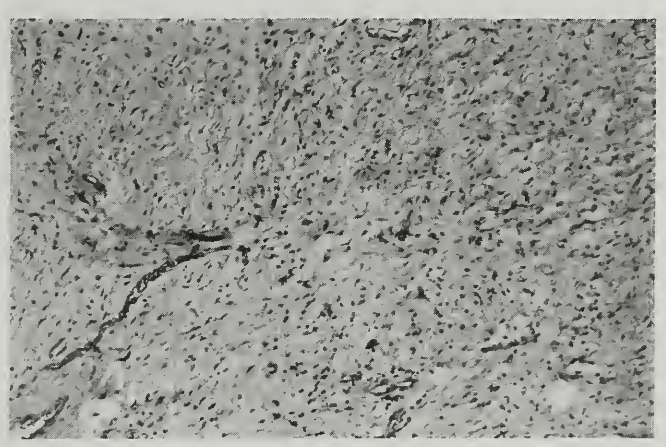

Figure 2
Later recurrence revealing a variety of histological types ranging from WDLS to myxoid, with a markedly increased cellularity (H and E stain, 40x).

In an attempt to form a new model of mesenchymal differentiation, Brooks analyzed six selected cases of human sarcomas containing double phenotypic patterns (including one case of differentiated liposarcoma).[10] In each case there was dedifferentiation of a given phenotype to a second histologic pattern of MFH, with a so-called "antigenic shift" (the loss of cell-specific antigen expression accompanied by the acquisition of another in the dedifferentiated areas), a phenomenon which has been documented elsewhere.[8,11]

He suggests a model that presumes dedifferentiation retraces the path of differentiation, and proposes MFH as an intermediate precursor between a primitive undifferentiated mesenchymal cell and some differentiated phenotype. By this model, dedifferentiation would proceed in a nonrandom fashion for those phenotypes with the intermediate precursor (ie, MFH), and relates various sarcomas to a common precursor because of the appearance of MFH in their patterns of dedifferentiation.

We believe this case supports and expands Brooks's model to associate directly two separate sarcoma phenotypes, liposarcoma and rhabdomyosarcoma, to the same immediate precursor. Whereas Brooks relied on the "final common pathway" of MFH to relate various phenotypes, this case gives direct evidence of two different phenotypes evolving in the same tumor and, presumably, from the same precursor.

It can be postulated that the changes seen in this tumor are a progression, rather than a regression (as the term "dedifferentiation" implies) of tumor histology and malignancy. First there is development of the typical anaplastic histology of the common precursor, and then progression of this precursor along a different developmental pathway. The appearance of two different phenotypes in the same tumor is the result of a totipotent tumor stem cell. By analogy, a relationship of liposarcoma, rhabdomyosarcoma, and chondrosarcoma to the same precursor can be made, since a case of dedifferentiated chondrosarcoma with a rhabdomyosarcomatous component has previously been described.[12]

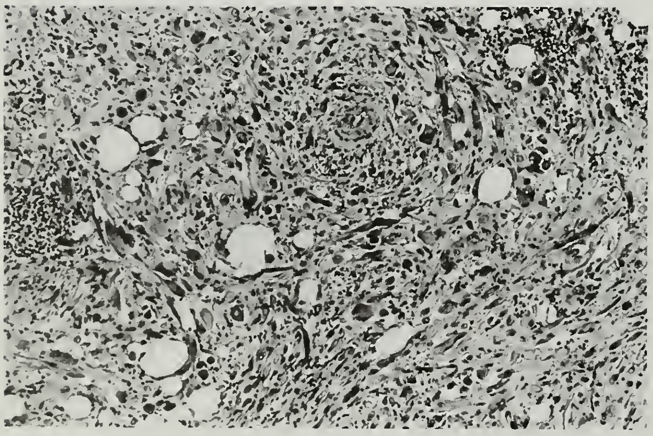

Figure 3a

Tumor section demonstrating a bizarre and pleomorphic tumor pattern, with a variety of cell types (H and E stain, 40x).

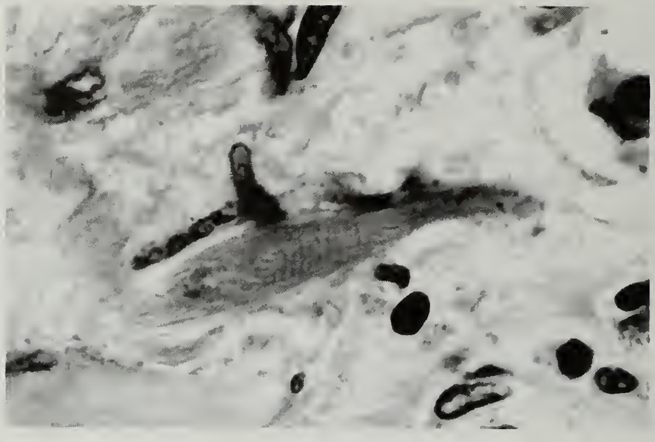

Figure 3b

Magnification of a representative tumor cell. Note the large, bizarre, atypical nucleus and cross-striations of skeletal muscle pattern (H and E stain, 400x).

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EPITOMES OF PROGRESS

Important Advances in Clinical Medicine

Pathology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in pathology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, or scholars to stay abreast of these items or progress in pathology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Pathology of the California Medical Association.

Tumor Necrosis Factor in Human Disease

THE active form of human tumor necrosis factor ∂ (TNF; cachectin) is a 157-residue (17-kilodalton) polypeptide cytokine. Its gene is located in the short arm of chromosome 6, near the gene of lymphotoxin (TNFß), another cytokine that shares some of its biologic activities. The best known sources of TNF are monocytes and macrophages, which secrete copious amounts of this protein on stimulation by endotoxin (lipopolysaccharide). In addition, T lymphocytes (CD4 and CD8), natural killer cells, Kupffer cells, microglia, and astrocytes appear to produce TNF. This cytokine, described in 1975, has been sequenced, cloned, and produced by recombinant techniques in humans in 1985 and in mice in 1986.

Tumor necrosis factor can be measured by biologic assays, such as using its property to lyse fibroblasts of the L929 or WEHI 164/13 lines, or by immunologic assays using monoclonal antibodies of various specificities. The latter include enzyme-linked immunoassays (ELISA) and immunoradiometric assays (IRMA), which currently allow the detection of TNF in the range of 1 to 10 pg per ml. This high level of sensitivity will be useful in establishing the normal concentrations in various tissues that are probably of great physiologic importance. Receptors for TNF have been found in normal tissues including lungs, liver, kidneys, intestine, and skeletal muscle. Endothelial cells are among those with high-affinity receptors. Injected TNF has a short half-life in plasma of 6 to 7 minutes. Normal plasma or serum levels are below 15 pg per ml.

The physiologic roles of TNF are the least known of its effects, partly because of the insensitivity of previous methods. Nevertheless, it appears that TNF is important at least in the inflammatory response and in tissue remodeling. In inflammation, TNF increases the chemotaxis of neutrophils and macrophages and the adhesion of leukocytes to endothelium, partly by increasing the expression of adhesion molecules such as intercellular-leukocyte and endothelial-leukocyte adhesion molecules (ICAM and ELAM). Tumor necrosis factor is one of the cytokines that induce expression of the histocompatibility antigens, such as class I major histocompatibility complex in endothelial cells. It is likely that many of the TNF effects are not direct but are mediated through substances known to be stimulated by TNF. These include other cytokines (interleukin 1 and 6, granulocyte-macrophage colony-stimulating factor, platelet-derived growth factor, and transforming growth factor-ß), prostaglandins, and hormones (catecholamines, glucagon, and the like). In its tissue remodeling role, TNF promotes the proliferation of fibroblasts and perhaps smooth muscle. In endothelial cells it induces the expression of tissue factor and of the inhibitor of tissue plasminogen

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activator, as well as the synthesis of collagenases, proteases, and prostaglandins. It is also directly toxic to endothelial cells. It has been proposed that TNF induces wound healing, but there are conflicting data about its role in angiogenesis.

The pathologic effects of TNF are better known. These include cachexia, septic shock, severe inflammatory reactions, and intravascular coagulation. Prolonged exposure to TNF alters several metabolic enzymes. In particular, it suppresses lipoprotein lipase and inhibits other lipid enzymes. The result is lipolysis, triglyceridemia, and glycogenolysis. In experiments, animals with long-term exposure to TNF become anorectic and depleted of protein and lipids. It is likely that anorexia and consequent cachexia in humans result from increased levels of TNF in various pathologic conditions including malignant neoplasms.

The rapid intravenous administration of lipopolysaccharide—4 ng per kilogram of *Escherichia coli* endotoxin—in humans has caused high peaks (~240 pg per ml) of plasma TNF 90 to 180 minutes later, coinciding with fever, chills, myalgia, rigor, headache, nausea, and tachycardia. There was a simultaneous elevation of blood adrenocorticotropin, cortisol, and catecholamines. Leukocytosis occurred four hours later, when the plasma TNF level was almost undetectable. The symptoms, but not the rise in TNF levels, were prevented by administering a cyclooxygenase inhibitor. Similar symptoms, plus hypotension, have occurred in volunteers receiving a bolus of recombinant TNF.

Larger doses of TNF in other species cause irreversible shock identical to the septic shock syndrome. That TNF is often responsible for septic shock is supported by a recent trial of anti-TNF monoclonal antibody. In 14 patients with septic shock, administering the antibody raised the blood pressure and prolonged survival. The experimental local effects of high tissue levels of TNF include hemorrhage, tissue necrosis, and abscesses. The systemic effects include disseminated intravascular coagulation. Increased levels of TNF in humans would likely result in similar alterations.

The importance of TNF in human diseases was first reported in patients with gram-negative sepsis (purpura fulminans of meningococcemia). Also, it has a pathogenetic role in cerebral malaria, both human and experimentally induced. In both of these life-threatening conditions, elevated blood TNF levels on admission have correlated with an increased incidence of death or sequelae. Based on experimental data, the use of anti-TNF antibodies is promising as a therapeutic tool. Clinical trials of monoclonal antibody are underway in patients with gram-negative septic shock, cerebral malaria, and the OKT3-induced syndrome (in the context of transplantation).

Other conditions associated with alterations of TNF in humans include rheumatoid arthritis, systemic lupus erythematosus, systemic vasculitis, cystic fibrosis, graft-versus-host disease, sarcoidosis, some parasitic infections (aside from malaria), septic arthritis, leprosy, and the acquired immunodeficiency syndrome. Patients with chronic heart disease have high serum levels of TNF, especially if they are cachectic. Such elevations in cachectic patients may be associated with activation of the renin-angiotensin system. In some conditions where blood TNF alterations are not detectable, dramatic changes may be found in other body fluids, such as in bronchial aspirates of patients with the adult respiratory distress syndrome.

It appears that some neoplasms, including a human breast carcinoma and a mouse fibrosarcoma, secrete TNF in vitro. There is even a transplantable mouse tumor line genetically altered to continuously secrete human TNF. Thus, the possibility of using levels of blood TNF as markers of neoplastic activity has been raised. Some investigators have found TNF immunoreactivity in the serum of 50% of patients with ovarian, breast, and colon carcinoma, lymphomas, and myeloma; in 18% of patients in complete remission; and in 3% of normal subjects. Other investigators have not detected TNF in cancer patients. Discrepant results of some TNF assays could be explained by the presence of TNF inhibitors, which would inhibit bioactivity but not immunoreactivity.

Although the name "tumor necrosis factor" was derived from the observation that it produced lysis of a murine tumor, subsequent research on its putative antineoplastic effects has been generally disappointing, especially for human tumors. It is cytotoxic for some animal (such as L929 fibroblasts) and human tumor cell lines and does cause necrosis of some experimental neoplasms, but it seems to be ineffective in vivo against a good many human tumors, and toxicity is often reached before tumoricidal effect. Nevertheless, clinical trials with recombinant TNF are in progress. It is possible that the addition of other cytokines, or conventional chemotherapy, radiotherapy, or hyperthermia may potentiate the antineoplastic effects of tolerable doses of TNF.

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Pathologic Mechanism of Pulmonary Graft Rejection

SINGLE-LUNG, double-lung, and combined heart-lung transplantation have become life-saving therapeutic procedures for patients with end-stage pulmonary diseases. Graft rejection and infections compose the major posttransplant complications and can be diagnosed by fiberoptic bronchoscopy with transbronchial biopsy.

The precise incidence of acute rejection in lung allograft recipients is unknown, but it has been estimated to be about 50% during the first two to three weeks after the procedure. Mild acute rejection is characterized by the development of interstitial edema and mild perivascular infiltrates by transformed lymphocytes, small lymphoid cells and eosinophils, endothelial cell swelling with occasional infiltration by lymphocytes (endothelialitis), and bronchial infiltrates by lymphoid cells and eosinophils or acute vasculitis, or both. These histopathologic features are usually patchy, and their diagnosis requires the examination of several histologic slides from each specimen.

Moderate rejection is characterized by prominent perivascular and bronchial lymphoid infiltrates with extension of the inflammatory cells into the alveolar septa. In severe rejection, the lung undergoes hemorrhage and infarction with thrombosis of arteries and veins and vasculitis with fibrinoid necrosis.

The diagnosis of chronic rejection in heart-lung transplant recipients remains controversial, but progressive pulmonary dysfunction due to bronchiolar and vascular complications has been described in about half of the long-term survivors. Obliterative bronchiolitis is the most important chronic complication in these patients. It can appear as early as 2 months after transplantation but usually results in respiratory symptoms at 11 to 12 months after the operation. In the early stages of obliterative bronchiolitis, the involved airways show ulceration and infiltration of their wall by inflammatory cells, followed by reepithelialization and intraluminal growth of granulation tissue with fibroblasts resulting in a scar that obliterates the airway lumen.

Vascular complications include the development of an unusual form of accelerated atherosclerosis with concentric proliferation of myofibroblasts in the intima of pulmonary veins and arteries resulting in intimal sclerotic thickening.

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Human Immunodeficiency Virus-Associated Nephropathy

THE kidneys have emerged as intriguing organs of involvement in patients infected with human immunodeficiency virus (HIV). In addition to infections and neoplasms, HIV-associated nephropathy has become an important manifestation of HIV infection. This disorder typically presents with heavy proteinuria and progressive renal insufficiency without hypertension. The kidneys are large at the beginning and usually remain so during the course of the disease. On microscopic examination there are consistent abnormalities in the glomeruli, tubules, and interstitium. The glomerular lesion is of focal and segmental glomerulosclerosis, often in an early stage of evolution. Clusters of visceral epithelial cells are enlarged and coarsely vacuolated, and capillary walls are partially collapsed. Capillary lumina may contain foam cells. There is degeneration and necrosis of tubular epithelium. Many tubules are microcystically dilated and filled with plasma protein-containing casts; Bowman's spaces are dilated and contain the same material. The interstitium is edematous and is infiltrated by scattered lymphocytes. At the ultrastructural level, there is effacement of the foot processes of visceral epithelial cells. Tubuloreticular structures are widespread in all vascular endothelium and occasionally in mesangial cells and epithelial cells. Furthermore, nuclear bodies and granular and granulofibrillar transformation of nuclei are also found. Immunofluorescence reveals granular immunoglubulin M and complement deposits mainly in the abnormal glomerular segments.

Because the ultrastructural cellular abnormalities are often associated with viral infection, one of the major considerations for the pathogenesis of HIV-associated nephropathy is of direct viral infection of renal epithelium. Using a complementary DNA probe, we documented HIV genome in renal glomerular and tubular epithelium, suggesting that HIV may be important in the initiation or progression of this disorder. This observation, however, leads to many unanswered questions, among which are, How does virus enter the CD4-negative renal epithelium? Are other factors, including infection with other viruses and hereditary considerations, also necessary?

A number of clinical features are worth noting. More than 90% of reported patients are African American; about 50% are intravenous drug abusers. Renal disease may antedate the development of other features of HIV infection, such as acquired immunodeficiency syndrome (AIDS)-related complex and AIDS. Indeed, about a third of the currently diagnosed cases of HIV-associated nephropathy in the United States are in patients who are HIV carriers. It is not unusual for a pathologist to suggest that the HIV-antibody status of a patient be determined based on a characteristic and diagnostic constellation of structural abnormalities in a renal biopsy specimen obtained to assess heavy proteinuria and azotemia. Renal function rapidly deteriorates; in most patients, end-stage renal failure develops within 6 to 12 months.

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Fine-Needle Aspiration Biopsy in the Diagnosis of Pediatric Tumors

DIAGNOSING tumors in children presents a special set of circumstances in which the desire for diagnostic techniques of low morbidity and good patient acceptance must be balanced with requirements for high diagnostic accuracy. While fine-needle aspiration biopsy (FNAB) is a cost-effective technique with good patient acceptance, it has received limited acceptance among pediatricians as an initial diagnostic tool. The relative rarity and small cell nature of many pediatric neoplasms have caused pathologists to be uneasy with the cytologic diagnosis of these tumors. In addition, many palpable nodules in children represent reactive lymphoid proliferations difficult to separate from lymphoma or leukemia on purely morphologic grounds. Recent advances in the areas of immunocytochemistry, molecular biology, and DNA probe technology have improved the diagnostic accuracy of FNAB for the evaluation of these proliferations.

Diagnosing small round cell tumors of children by FNAB offers some advantages over diagnosis by open biopsy in that surgical excision may be delayed until after chemotherapy has reduced the tumor size. The limited size of the specimen obtained by FNAB, however, may deprive a treating oncologist of valuable information relating to histologic grade, tumor karyotype, and oncogene identification, and immunocytochemical techniques have allowed the identification of chromosomal abnormalities, differentiation markers, and oncogene amplification in specimens obtained by aspiration. While FNAB is currently most useful in the diagnosis of recurrent or high-stage disease, future advances in molecular biology may allow FNAB to supply prognostic and therapeutic information now available only by open biopsy.

Fine-needle aspiration represents a simple method for separating patients with clinically suspicious adenopathy into surgical and nonsurgical candidates. The combination of morphologic analysis with immunocytochemical documentation of light-chain clonality appears highly accurate for distinguishing benign adenopathy from lymphomas. Patients with cytologically and immunohistochemically benign adenopathy may be observed attentively and patients with morphologically suspicious disease should undergo open biopsy. Following this scheme, the number of biopsies done for adenopathy can be reduced.

Fine-needle aspiration biopsy can yield valuable diagnostic information in various head and neck lesions. It has been shown to be an accurate method for evaluating thyroid nodules and can identify a variety of embryologic rests within the head and neck. The ease of FNAB coupled with its high diagnostic accuracy makes it a desirable method for diagnosing lesions arising in children.

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Molecular Mechanisms of Heart Muscle Disease

SUBCELLULAR mechanisms of dilated heart muscle disease (congestive cardiomyopathy) are poorly understood. With the development of techniques of molecular biology, some casual events in a specific form of congestive cardiomyopathy, the form induced by the anthracycline doxorubicin (Adriamycin) hydrochloride, have recently been elucidated. Postulated mechanisms of doxorubicin congestive cardiomyopathy include DNA intercalation, free-radical injury, lipid peroxidation, and mitochondrial damage. It has been shown that a relatively specific effect of doxorubicin use is selective changes in the expression of cardiac ∂-actin (∂_c-actin) polypeptide and messenger RNA in vitro and by analogous studies in vivo. This selective defect in the expression of a critical sarcomeric protein may ultimately relate to the defective contractility in doxorubicin congestive cardiomyopathy.

Data show that doxorubicin has a relatively selective effect on the steady-state expression of ∂_c-actin mRNA compared with nonsarcomeric ß-actin or glyceraldehyde-3-phosphate dehydrogenase mRNAs in the rat heart in vivo in both a dose-related and a temporal way in which the nadir acute doxorubicin effect occurred three days after therapy. It has been known for years that doxorubicin congestive cardiomyopathy is related to cumulative doxorubicin therapy. Many antineoplastic chemotherapy regimens use sequential doxorubicin administration, which may empirically correlate with recent in vivo- and in vitro-derived scientific data.

The defect in the expression of ∂_c-actin mRNA induced experimentally by doxorubicin may relate to cumulative toxic effects. We have initiated an experimental model for recovery of the heart from doxorubicin's cardiotoxic effects. In this model, cardioprotective agents are used to prevent doxorubicin cardiotoxicity. Preliminiary data suggest that the effect of the drug on ∂_c-actin mRNA expression cannot be ablated by administering some cardioprotectant agents such as ICRF 187.

Molecular biologic methods have been applied more recently to the emerging problem of congestive cardiomyopathy in the acquired immunodeficiency syndrome (AIDS) to explore its subcellular mechanisms. Preliminary data suggest zidovudine (AZT), the widely used antiretroviral drug, has an associated cardiotoxicity in rats that is manifested ultrastructurally by mitochondrial disarray in cardiac myocytes. The doses used in the experimental system were relatively high compared with those used in AIDS therapy at present. Future work will explore the molecular mechanisms of AZT cardiotoxicity by attempting to localize the molecular targets that may correlate with the observed cardiac ultrastructural changes induced by AZT by using methods adapted from doxorubicin-induced congestive cardiomyopathy models.

The pathogenic mechanism of drug-induced congestive cardiomyopathy may not directly relate to a depressed expression of ∂_c-actin mRNA in the heart. Nonetheless, it is intriguing to find that depressed ∂_c-actin mRNA expression in the myocardium appears to relate pharmacologically to doxorubicin administration. Future studies may link doxorubicin-induced congestive cardiomyopathy mechanistically with defects in the expression of sarcomeric proteins and mRNAs, particularly ∂_c-actin. Studies of models of the disorder provide a better understanding of the molecular mechanisms that are involved in the regulation of myocardial actin homeostasis in health and potential derangements in heart muscle disease.

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Hepatitis C Test

NON-A, non-B Hepatitis, defined as hepatitis resulting from infection with agents other than the hepatitis A or B viruses, is the most frequent transfusion-associated infection in the United States and a major cause of transfusion-related morbidity and mortality. Studies in the late 1970s showed that non-A, non-B hepatitis developed in as many as 10% of transfusion recipients. Although the acute infection is usually asymptomatic, chronic liver disease will develop in 50% of infected patients, and in 20% of these, cirrhosis may develop. In the absence of a specific test for the causative agent of non-A, non-B hepatitis, blood banks in the mid-1980s began screening donors for elevated levels of alanine animotransferase (formerly glutamic-pyruvic transaminase) and antibody to the hepatitis B core protein. These tests were predicted to identify 30% to 40% of infectious blood donors.

Transmissivity studies in animals indicated that the major causative agent of non-A, non-B hepatitis was a small RNA virus, although many attempts to isolate this agent were unsuccessful. Recently investigators at the Chiron Corporation and the Centers for Disease Control took a novel approach and synthesized components of this virus using recombinant DNA technology. The investigators isolated nucleic acid from the plasma of a chimpanzee with non-A, non-B hepatitis and inserted pieces of this material into bacteria. Of 1 million recombinant bacterial colonies screened, one expressed a protein recognized by antibodies from patients with non-A, non-B hepatitis. The genetic insert in this colony was identified, and a larger genetic clone containing this sequence was then inserted into yeast. The recombinant protein produced by this yeast, called the C100-3 protein, is the basis for the hepatitis C virus (HCV) screening test licensed by the Food and Drug Administration (FDA) on May 2, 1990.

The HCV screening test detects antibodies that bind to the C100-3 protein. A large majority of patients with chronic non-A, non-B hepatitis, both transfusion-associated and non-transfusion-associated, have antibodies to this protein. The test has limited value, however, in the diagnosis of acute hepatitis. Antibodies to the C100-3 protein do not appear until an average of 22 weeks from the time of infection and may not appear for a year or longer. Some patients may lose antibody to this protein at different phases of their liver disease.

Blood banks instituted the HCV screening test as soon as it was licensed by the FDA. Approximately 0.4% to 1.5% of volunteer blood donors have a reaction with this test. It is estimated that the use of this screening test will further decrease the rate of transfusion-transmitted non-A, non-B hepatitis by at least 50%.

False-positive reactions on the HCV screening test occur. Research confirmation tests, available from the manufacturers of the screening test, indicate that as many as 40% to 60% of the reactions in blood donors are false-positive—that is, unrelated to hepatitis C. Among populations at high risk for non-A, non-B hepatitis, however, such as persons with hemophilia and intravenous drug users, almost all reactions are confirmed. Preliminary data suggest that the results of these confirmation tests correlate with infectivity.

Preliminary epidemiologic studies using the HCV screening test indicate that these is a low risk of nonparenteral viral transmission but that there may be an association of hepatitis C with cirrhosis, hepatocellular carcinoma, and possibly "idiopathic" liver diseases. These issues will have to be examined more closely in conjunction with the use of confirmatory tests.

Investigators have now successfully sequenced the entire genome of hepatitis C, which they have established to be a single-stranded RNA virus with a structure similar to flaviviruses. Other regions of the viral genome are now being investigated in search of other immunogenic viral components.

It is remarkable that this infectious agent that has so long eluded isolation or even visualization has finally been characterized. Although there are other agents which can cause non-A, non-B hepatitis, this recent accomplishment will go a long way toward improving the safety of the blood supply and our understanding of the epidemiology and natural history of the major form on non-A, non-B hepatitis.

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Epstein-Barr Virus in Hodgkin's Disease

ON the basis of epidemiologic and serologic studies, Epstein-Barr virus has long been suspected to be implicated in the pathogenesis of Hodgkin's disease. Recently researchers used molecular hybridization techniques and in situ hybridization to demonstrate the presence of Epstein-Barr viral DNA in about 20% of tissues involved by Hodgkin's disease. Other investigators have used Southern blot testing to show Epstein-Barr viral DNA in between 16% and 29% of patients with Hodgkin's disease. Analyses of cases of Hodgkin's disease by dot blotting and polymerase chain reactions have generally produced similar results, except for a preliminary study in which about 60% of patients with lymphocyte-predominant Hodgkin's disease were found to have cells whose DNA contained Epstein-Barr virus-related sequences. In that study, DNA from formalin-fixed, paraffin-embedded tissue was analyzed after 40 cycles of the polymerase chain reaction and compared with control specimens.

Messenger RNA coding for interleukin 5 has recently been detected in Reed-Sternberg cells and variants in patients with Hodgkin's disease. In view of a report that Epstein-Barr virus-infected cells of Hodgkin's disease could explain the frequent presence of eosinophilia and hyperglobulinemia in patients with Hodgkin's disease. As techniques to detect the Epstein-Barr virus become more refined, it is likely that additional persons with Hodgkin's disease will be shown to be infected with this virus. Such a finding will have important implications for hematopathologists who must distinguish between benign infection by the Epstein-Barr virus and Hodgkin's disease.

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Tumor Suppressor Genes

THE high frequency of cytogenetic, chromosomal, or single gene changes in most tumors had led to the concept that tumors represent a somatic cell genetic disease. With this realization, a major focus of tumor research has been to identify specific altered genetic factors and mechanisms that may be involved in tumor origin or progression.

A considerably increased understanding of tumor cell growth has come from the study of oncogenes, about 40 of which have been described. These oncogenes represent, in most instances, hyperactive deregulated states of normal cellular proto-oncogenes. Their altered states appear to be associated with increased tumor cell growth. At the cellular level, oncogenes appear to act in a dominant fashion. To date, however, mutations of the proto-oncogenes have not been associated with inherited tumors.

More recently, there has been evidence that a loss of function of certain genes may be associated with tumor growth. These have been variously called tumor suppressor genes, recessive oncogenes, antioncogenes, and growth-suppressing genes. Part of the reason for these several terms is that the normal function of these genes remains largely unknown. In contrast to the oncogenes, these tumor suppressor genes tend to be associated with tumors that are inherited in an autosomal dominant manner but that, at the tumor cell level, behave as recessive traits in that the loss of their function is associated with the tumor cell growth.

The prototype of tumor suppressor genes is the retinoblastoma gene. The risk for this tumor to develop may be inherited in an autosomal dominant manner due to a mutated gene on chromosome 13. Based on characteristics of the tumor, many years ago, Knudson proposed a two-hit theory for the development of this tumor. According to this theory, one of the mutations in the inherited form of the tumor is inherited and requires only a second mutation to occur in any affected cell. With the sporadic form, it requires two new mutations to occur in the same cell. The subsequent studies with retinoblastoma have supported this hypothesis. In the retinoblastoma tumor, there is evidence for loss of function of both alleles at the retinoblastoma locus. This can occur through a variety of mechanisms including molecular mutations in the genes, somatic cell chromosome segregation, and somatic cell crossing over. In the inherited form of this tumor, the normal allele is altered or lost, resulting in a loss of the heterozygous state for the tumor-producing allele and the normal allele. One continuing perplexity is that in the inherited form, the persons are also at an increased risk for other tumors—such as osteosarcomas and small cell lung carcinoma—to develop later in life. In these other tumors, the retinoblastoma gene is also altered so that there is a loss of its function in these tumors as well. More recent studies have suggested that the normal product of the retinoblastoma gene can bind to oncogene products of DNA tumor viruses and that the product also appears to bind cellular DNA. There has also been an indication that phosphorylation of the retinoblastoma protein is associated with cell growth and that the unphosphorylated state is associated with a lack of cell growth.

Following the retinoblastoma story, a second tumor which was studied for a loss of heterozygosity is the Wilm's tumor, which is sometimes associated with a partial chromosome deletion of the short arm of chromosome 11. Examination of the tumor cells indicated a loss of heterozygosity for markers on the short arm of chromosome 11. Recently a gene from this area has been isolated that appears to have the characteristics of the Wilms' tumor gene. The story here, however, may be more complicated in that in at least one form of the inherited tumor, the inherited gene does not seem to be in this area. Nevertheless, the approach of using the loss of heterozygosity in tumor cells has been extensively pursued, and, in a number of tumors, there does appear to be a loss of heterozygosity, suggesting that tumor suppressor genes may be located in the involved chromosomes or regions of chromosomes. These include the following tumors, with the loss of heterozygosity for the specific chromosome region noted in parentheses: melanoma, neuroblastoma (1p); breast carcinoma (1q); small cell lung carcinoma, renal cell carcinoma (3p); familial polyposis coli (5q); rhabdomyosarcoma (11p); multiple endocrine neoplasia (11q); colon carcinoma (17p); colon carcinoma (18q); and acoustic neuroma (22q).

Whereas only a small percentage of tumors are inherited as a simple mendelian trait, there are both inherited and sporadic forms of tumors, and these appear to be histologically indistinguishable. These studies and those noted earlier in the study of retinoblastoma suggest that at the somatic cell level, some of the same genes may be involved in the development of both inherited and sporadic forms of tumors.

These recent advances are leading to an increased understanding of which genes contribute to tumor development and the mechanisms that may be involved. Such understanding should lead to the development of preventive measures, earlier tumor detection, and, therefore, improved treatment and management of tumors. For example, improved genetic counseling has resulted from the recognition of the retinoblastoma gene. This clearly is only the beginning of the story, and there is every reason to expect that the role of tumor suppressor genes will become increasingly clear as our study of them expands.

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Analysis of Solid Tumors by DNA Cytometry

DNA cytometry of a solid tumor provides information about its genetic composition (DNA ploidy) and its rate of cellular proliferation (S-phase fraction). These properties relate importantly to the clinical behavior of a malignant neoplasm—to its potential for metastatic recurrence, to the rate at which it grows, and, on occasion, to its responsiveness to therapy. Their clinical significance is clearly established for breast, lung, colon, and ovarian cancers and less clearly for thyroid, prostate, bladder, and renal cancers and for malignant melanoma.

There are two different methods for DNA cytometry; each measures the DNA content of individual cells. In flow cytometry, the tumor first is disaggregated to give a monocellular suspension. The cells are stained for DNA with a fluorescent dye and then are measured individually as they stream through a laser beam. In image cytometry, the cells are on a microscope slide, either as a whole cell preparation, such as a touch preparation or a smear from a fine-needle aspiration, or as a section cut from a paraffin-embedded tissue specimen. The slide is stained for DNA, and an automatic microscope system is used to measure the nuclear stain content of several hundred cells. For either method, measurements are displayed as a frequency distribution histogram in which the X axis represents DNA content and the height represents the number of cells having that DNA content.

Flow cytometry is the more commonly used method. Tens of thousands of cells are measured within minutes to give smooth and precise histograms that readily lend themselves to formal mathematic analysis. Its reliability, however, is limited by the need to dissociate the tumor. The flow specimen may contain many normal cells from adjacent nonmalignant tissue and from stromal, endothelial, and inflammatory components of the tumor itself. Thus, it is possible for the DNA histogram of a tumor to reflect primarily the normal rather than the malignant component.

Image cytometry is much slower and more labor-intensive than flow cytometry. Fewer cells are measured, and so the DNA histogram lacks the precision of a flow histogram. When sections are measured, the resolution is degraded still further because the section will cut through nuclei at random levels so that rying portions of nuclei are included within the thickness of the section. Nevertheless, image cytometry is similar to conventional microscopic analysis, and so it is possible for the operator to identify each measured nucleus. Thus, while the DNA histogram may lack the resolution of flow, it can be relied on to represent only malignant cells and to be free of contamination by nontumorous cells.

DNA histograms are analyzed first for DNA ploidy by locating the major peak of the histogram—the DNA content shared by most of the cells. If this value is the same as that for normal tissues, then the tumor is DNA diploid; otherwise, it is DNA aneuploid, with a DNA index that is the ratio of the tumor value to the normal value. Flow or image cytometry reliably detects a deviation of 10% from normal.

Further analysis of the DNA histogram estimates the fraction of tumor cells that are in the S phase (synthesizing DNA). The DNA content of S-phase cells is intermediate between the major histogram peak (postdivision resting cells) and the peak located at twice this DNA content (predivision and dividing cells). The S-phase fraction relates directly to the rate of cellular proliferation—the higher the fraction, the more rapidly the tumor is growing. Estimating the S-phase fraction from the DNA histogram is difficult, however, and the results become unreliable if the preparation contains much nuclear debris or if the tumor has aneuploid populations of cells.

The usefulness of DNA cytometry in evaluating most solid tumors is extensively documented in studies using either flow or image cytometry. Many of these studies are retrospective, using archival paraffin-embedded tissue blocks. Thick (50 μm) sections are cut from the block and then are dissociated to obtain isolated nuclei for either flow or image cytometry. Such studies show that DNA aneuploidy and high S-phase fractions are usually associated with tumors of high clinical stage, high histopathologic grade, and generally poor prognosis. The independent diagnostic and prognostic powers of DNA cytometry become particularly important in low-stage tumors. For example, even low-stage breast, thyroid, or prostate cancers that show DNA aneuploidy or a high S-phase fraction have a high probability of establishing distant metastases whereas comparable DNA-diploid, low S-phase tumors are unlikely to metastasize. The results of DNA cytometry then provide clinicians with relevant information about the potential aggressiveness of the cancer.

In summary, DNA cytometry provides important diagnostic and prognostic information for the evaluation of solid tumors. This is most clearly established for low-stage breast cancers but also is well documented for a broad range of solid tumors. DNA cytometry is not infallible, however. As with all new tests, its power and limitations should be clearly understood, and results should be interpreted cautiously within the context of the overall clinical and histopathologic picture.

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Relationship of Amyloid to Alzheimer's Disease

THE clinical diagnosis of Alzheimer's disease or senile dementia of Alzheimer's type is confirmed in suspected cases by a neuropathologist after a careful examination of brain sections after necropsy. Of the microscopic lesions used to confirm the clinical diagnosis, all are present in normal aged brains but occur in exaggerated number and severity in the brains of patients with Alzheimer's disease. Three of these microscopic criteria have the classic tinctorial properties associated with ß-pleated sheet fibrils, or amyloid. These are senile plaques, neurofibrillary tangles, and cerebral amyloid angiopathy or cerebrovascular amyloidosis. Of these, senile plaques and amyloid angiography are biochemically related, whereas the amyloid of neurofibrillary tangles appears to be composed of a different peptide. Whether the amyloidotic peptides found in excess in the brains of patients with Alzheimer's disease are a cause of the disease or simply an epiphenomenon is not clear. Nevertheless, brain amyloid is considered a marker of Alzheimer's disease or senile dementia of Alzheimer's and its presence is important in confirming the diagnosis pathologically.

Senile plaque and microvascular amyloid are biochemically similar if not identical and consist of a unique peptide with a molecular weight of about 4,200. Since 1987, molecular biologic techniques have been used extensively to show that this peptide (known as the A4 or ß-peptide) derives from a large precursor molecule composed of almost 700 amino acids. The identity of senile plaque and microsvascular amyloid has been confirmed both biochemically and indirectly using immunohistochemical techniques at the light and ultrastructural levels. Some have suggested that immunohistochemistry using antibodies to the Alzheimer A4 or ß-peptide is more sensitive in showing the earliest lesions of Alzheimer's disease than conventional silver stains or

Congo red or thioflavin methods. Immunohistochemical studies have also shown the A 4 or ß-peptide is widely distributed in the brain, being found in areas not traditionally thought to be affected by the neuropathologic changes of Alzheimer's disease, such as the deep central grey matter, brain stem, and cerebellum, and it may even be seen in the gut and skin.

Current research on the biochemistry and molecular biology of Alzheimer A4 or ß-peptide amyloid focuses on several areas. An intensive effort is aimed at establishing how the peptide is cleaved from its precursor (the A4P or APP molecule) and whether it originates in the brain, the peripheral circulation, or both. Although A4 or ß-peptide is the most commonly observed amyloid in the central nervous system of patients with Alzheimer's disease or senile dementia of the Alzheimer's type, small amounts of √-trace peptide (usually associated with amyloid angiopathy in Icelandic patients who have familial cerebral hemorrhage) have recently been found in the walls of the amyloidotic arterioles of patients with Alzheimer's disease. The biologic importance of this finding remains to be determined. Ideally, patients with Alzheimer's disease might be segregated from patients with non-Alzheimer's dementia by the finding of elevated levels of A4 or ß-peptide in the blood or cerebrospinal fluid—that is, a simple biochemical test could be used to confirm the presence of Alzheimer's disease. This is now done inferentially from clinical data and imaging studies, and the autopsy is used for definitive confirmation.

The A4 protein has been shown to be accumulated within lysosomes of certain neuronal populations in the brain, suggesting that proteolysis of the precursor with resultant deposition of the A4 or ß-peptide within tissues may be a pivotal event in the neuronal degeneration that characterizes Alzheimer's disease both clinically and pathologically. In any event, research into possible mechanisms of processing of the A4 peptide into an insoluble form in the brain may lead to therapeutic strategies by which this processing can be engineered so that smaller amounts of microsvascular and senile plague amyloid are ultimately deposited within brain parenchyma. It remains an open question whether this will lead to stabilization or amelioration of the clinical signs and symptoms of Alzheimer's disease or Alzheimer's senile dementia.

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Stereotactic Brain Biopsy

THE management of mass lesions of the brain continues to evolve with the increasing availability of stereotactic biopsy. Stereotactic biopsy is done through a small drill hole in the skull under local anesthesia and carries an extremely small risk of complications. The total time for obtaining a biopsy specimen is about two hours. Most patients come in for the procedure in the morning and leave the hospital after an overnight observation period. Stereotactic biopsy is capable of procuring tissue from virtually any location within the cranial cavity, including the third ventricle, hypothalamic region, brain stem, and posterior fossa. The availability of stereotactic biopsy allows the histologic diagnosis of any brain mass.

Basic mathematic principles are used to identify any point within the cranial cavity by means of three coordinates. The stereotactic instruments provide the three coordinates that guide the biopsy forceps to a target point determined on the radiologic image. With experience, representative material is procured in virtually all cases.

The pathologic interpretation is limited by the small size of the specimen, however.The accuracy of histologic diagnosis in experienced hands is about 90% overall. The use of smears is highly recommended as the primary means of making a diagnosis.

The accuracy and specificity of diagnosis are greatest for regionally homogeneous neoplastic lesions such as metastatic carcinoma, craniopharyngioma, oligodendroglioma, and malignant lymphoma. In these cases, the diagnosis depends only on the neurosurgeon obtaining tissue from the lesion and the pathologist making the correct diagnosis.

In regionally heterogeneous neoplasms such as astrocytomas and pineal germ cell neoplasms, the small size of the specimen creates theoretical problems. Here the diagnosis depends not only on obtaining abnormal material and the pathologic interpretation but also on regional differences within the neoplasm. Two solutions are available at stereotactic biopsy to overcome this problem. The first is to take several specimens from different target points in the lesion, increasing the tissue volume to provide a representative sample. This adds to the time and risk of the procedure but is an acceptable solution. The second is to interpret the biopsy in conjunction with full clinical and radiologic data to arrive at a clinicopathologic diagnosis. We use the latter method, and it has been our experience that a single specimen from an astrocytic neoplasm provides an accurate placement of the lesion in a three-tiered classification that is adequate for appropriate clinical management. The use of single biopsy specimen in conjunction with tumor markers and radiologic features is adequate for most pineal germ cell neoplasms.

The lowest accuracy rate for stereotactic biopsy is attained when the biopsy specimen shows inflammation. Most of these will be nonneoplastic lesions. The rate of identifying a specific cause is low and requires careful handling of the tissue for immunohistochemistry (viral antigens), electron microscopy (viral particles), culture, and polymerase chain reaction (viral nucleic acid). Although a stereotactic biopsy specimen that shows inflammation is rarely from a neoplasm, we have had specimens interpreted as nonspecific inflammation turn out on a subsequent specimen to be malignant lymphoma, Hodgkin's disease, pineal germinoma, and anaplastic astrocytoma. It is prudent, therefore, to carefully evaluate inflammatory lesions diagnosed on stereotactic biopsy for the possibility of a neoplasm.

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Micrometastases in Melanoma

THE five-year survival rate for patients with melanoma spread to the regional nodes, the first site of metastasis for most melanoma patients, varies from 20% to 50% according to the number of nodes that contain metastatic melanoma and the micrometer measured thickness of the primary tumor. Such evaluation underestimates the number of patients who will die of melanoma, in part because some nodes contain tumor cells that are not detectable on examination of hematoxylin- and eosin-stained sections, even when step sectioning is done. Immunohistochemistry with antibodies to S-100 protein or monoclonal antibodies to melanoma-associated epitopes showed that a conventional histologic assessment underestimates the number of tumor-containing nodes by 29% in patients with nodal spread of melanoma. A surprising 10% of patients with clinical stage I melanoma are in fact stage II when the nodes are examined by standard histologic techniques. A subsequent immunohistochemical assessment of patients whose nodes are negative on hematoxylin- and eosin-stained sections identifies 14% as having small occult micrometastases of melanoma in their nodes. The frequency of occult tumor cells increases with increasing thickness and depth of the primary tumor. Patients whose nodes contain micrometastases have a less favorable prognosis than those whose nodes are truly tumor free.

Studies with dye injected intraoperatively into the area of the primary tumor have shown that nodes that contain micrometastases lie nearest to the primary tumor on the direct lymphatic drainage pathway from it. Most patients have occult tumor cells in a single node, but as many as three nodes may be involved. The capacity to identify metastatic melanoma at a truly early stage and to delineate precisely the nodes most likely to contain micrometastases provides a new approach to the management of high-risk stage I melanoma. By using the dye-orientation approach, it is possible accurately to stage such tumors by selective lymph node biopsy and to limit the use of lymphadenectomy to persons with proven nodal tumor. This technique spares node-negative patients the complications of lymphadenectomy.

The immunohistochemical detection of micrometastases of melanoma will likely have important implications for staging, prognostication, and patient management. For these reasons immunohistochemical evaluation of lymph nodes is likely to become more widely applied. To validate the technique in the management of melanoma, a multicenter prospective trial is currently being organized. This management approach is unlikely to be limited to melanoma as occult tumor cells have been detected in patients with other forms of malignancy, including lung cancer, breast cancer, neuroblastoma, and vulvar cancer.

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Cytopathology—A Multiparameter Approach

CYTOLOGY and fine-needle aspiration biopsy (FNAB) are enjoying wide acceptance in this country as screening modalities, for diagnosis, for staging known malignant tumors, for assessing response to therapy, and for determining the need for further procedures. While the overall efficacy of cytologic and FNAB diagnosis when practiced by experienced professional has been proved, histologic confirmation is advisable in many cases—such as the primary diagnosis of malignant lymphoma—before treatment is initiated. It is exciting to recognize that the application of ancillary studies including flow cytometry, immunoctyochemistry, and image cytometry in cytology has now enhanced the accuracy of cytologic diagnosis and is contributing to the understanding of the biologic behavior of tumors.

Flow cytometry and image cytometry are used to quantitatively measure a variety of cell features including cytoplasmic and nuclear antigens and DNA content. Flow cytometric analysis is well established in evaluating hematologic specimens in which blood cell phenotyping and the quantification of various cell subpopulations are indicated. This method also has been applied successfully to cytologic specimens such as effusions, bladder washings, bronchoalveolar lavage fluid, cerebrospinal fluid, and cell suspensions of lymph nodes and tumors prepared from FNAB. Cell characteristics are assessed in a flow-based system in which thousands of cells are passed singly in a fluid stream through the tip of a flow chamber where scattered light and fluorescent signals are measured. The identification and quantification of cell surface antigens are helpful in evaluating lymphoproliferative disorders including non-Hodgkin's lymphomas. For example, the flow cytometric documentation of light chain restriction in a B-lymphocyte population is considered confirmatory of malignant lymphoma. In cases in which the cytologic diagnosis of malignant lymphoma is straightforward, flow cytometry also is useful in characterizing the lymphoma as of T- or B-cell origin or perhaps as one lacking B- or T-cell markers, data that generally correlate with the prognosis. Flow cytometry also may be used for DNA analysis. Combining flow DNA analysis for aneuploidy with a traditional urinary cytologic examination in patients with bladder cancer has been shown to dramatically increase the sensitivity for malignancy. This is just one example of the efficacy of a combined approach to diagnosis.

Immunocytochemistry as applied to cytologic smears and cytocentrifuge preparations may be used to assess cell antigens and hormone receptors. These studies may be done on direct smears, cytospins prepared from body fluids, and cytospins made from cell suspensions from lymph node and tumor FNABs. The use of immunoperoxidase techniques for cell surface marker studies has been extended to the identification of estrogen receptors in patients with breast cancer. Estrogen receptor immunocytochemical assay has been used successfully on cytologic smears prepared from FNAB. The method has been found to be highly sensitive and specific with good correlation with biochemical assays for estrogen receptor from the same tumor.

Image cytometry is used to measure cell components such as cell size, nuclear size, and DNA content in a microscopic slide-based system. Image cytometry may be applied to direct smears or cytocentrifuge preparations that are appropriately processed to stabilize DNA before hydrolysis. Generally carcinomas with an aneuploid DNA pattern have been found to behave more aggressively than those in the diploid range. This is particularly true in prostatic, bladder, and ovarian carcinomas.

Cytology now commands the use of an impressive array of ancillary studies that enhance cytomorphologic interpretation. While their use requires considerable experience, they represent a valuable adjunct to diagnosis in the practice of cytology.

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Why CME?

C. EVERETT KOOP, M.D.

AS Surgeon General, I have had the good fortune of meeting and visiting with thousands of people throughout the country, and I gained a valuable lesson from those encounters. I have seen firsthand that the American people and their physicians are ready and willing to fight the sicknesses that devastate the poor and disadvantaged and the physical and psychological injuries that destroy families and steal the joy from childhood.

I believe history will remember the 1980's as the decade in which people, by and large, began to recognize the opportunity they had to take charge of their health and did, in a sense, change their options and affect their own destinies. The evidence of this is all around us, from exercise videocassettes to the ever-present oat bran on our grocery store shelves. It is also materializing in more concrete ways. Smoking continues to decline. Casual drug use, has, according to studies, leveled off and is, in some cases, dropping. Alcohol consumption is also down, but especially hard liquor; people are turning from that to beer, wine, or even water.

Lifestyles are being restructured because of a greater awareness of the causes of heart disease, cancer, and stroke. The elderly who planned ahead — say, at 45 or 50 — can live quality years after 65 because they have changed lifestyles and taken charge of their health. Health care is no longer an abstract concept to millions of Americans — it is a very personal component in the makeup of our everyday lives. And I think the American people are beginning to understand public health, thanks to AIDS. This change for the better in the national mindset brings with it significant responsibilities for those of us in the medical profession. It requires, in short, a devotion to continuing medical education.

CME should be an inherent part of our belief system as physicians. The era in which we live makes it critical that we embrace the concept of continuous learning. Embrace is the key word. You have to have the mindset to do CME. Once you slip out of that mindset, it is very, very hard to get back in.

I believe that we are in the early stages of a new period in medical history. A period in which we look at technology with a more critical eye and a sharper perspective. A period in which we reaffirm the role of the human touch in providing health care. Technology is a blessing, but it is a mixed one. The public has, all to frequently, come to believe in the magic of medicine, to equate the technological with the miraculous. And, too often, some of our colleagues have promoted that kind of reverence for technology, the belief that machines are self-perpetuating agents of salvation rather than simply limited tools. That's yesterday and today. I don't believe it will be the case tomorrow. In fact, I believe it is changing right now. There is an increasing sentiment in the public that technology does not — cannot — answer all of its needs or, for that matter, what it needs and wants the most.

I've seen this growing antipathy toward high tech in neonatal intensive care. I've watched it closely — after all, I built the first neonatal intensive care unit in the country, back in what my children would refer to as olden times. This is a field that has seen extensive technological growth, from infant respirators and small-bore endotracheal tubes to micro blood gas analyzers. This miniaturization of specialized equipment has brought new hope to sick infants. At the same time, however, it has not always brought comfort and assurance to their parents, especially in the exorbitant costs. With the inclusion of more complex equipment, more personnel with particular areas of expertise are involved. Where parents used to interact with one physician who knew everything about their newborn son or daughter, today they don't always know where to turn with their questions and concerns. Technology, in circumstances like these, has brought us the epitome of impersonalized care: computers, wires, tubes, and monitors watching the baby, checking every vital function and a few that aren't — all in place of human eyes and hands. Neonates aren't alone. We deal with their

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C. EVERETT KOOP, M.D., former Surgeon General of the United States. From an address before the Third International Conference on Continuing Medical Education, Annenberg Center for Health Sciences, Palm Springs, California, 14 December 1989.

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great-grandparents in the same way in their final illnesses. Have we reached the ultimate in care, or is there a better way? I have to believe in the latter.

I think the public believes the balance between technology and humanity in medical care has tipped too far to one side. This is evident in the growing number of people who oppose the use of extraordinary measures to prolong the agony of the dying. They see, in those circumstances, technology as a curse rather than a blessing. We are beginning to hear the public say that it needs and wants the kind of systems that promote healthful living or that help older people and people with disabilities or chronic illnesses to live as healthfully as possible and independently in their own homes.

And, with that kind of positive, life-affirming hardware, they want responsible, knowledgeable, up-to-date physicians — not computers, but people — to provide personal, competent, compassionate care. It is then our duty as professionals to provide that knowledgeable, up-to-date care. It should also be our desire, our privilege, and our ultimate fulfillment.

Another key factor in this new period in medical history is the growth of the self-help movement. When I convened a Surgeon General's workshop on self-help, I discovered an estimated 15 million people deeply, devotedly, involved in this initiative. I now believe I severely underestimated that number. These people, cutting across all social, racial, ethnic and economic lines, are providing leadership in areas in which they perceive traditional medicine is not: health promotion, disease prevention, counseling, and mutual aid — what some call cognitive medicine. The self-help movement embraces a wide array of activities, everything from Alcoholic Anonymous and its sister organizations, smoking cessation groups and programs, drug counseling and treatment, to an assortment of support groups for persons with family, personality, sexuality, and infectious disease problems, as well as those recovering from a major health ordeal. These groups and individuals are remarkably successful at what they do. They are helping people in large numbers.

Having said that, though, I have a concern, a major concern. It disturbs me that some people who need the help of professionals with medical training may not be getting it. Are they putting their health and their lives in peril as a consequence? I believe there is always a role for traditional medicine to play. Self-help is supportive, an adjunct. Physicians and nurses should look toward taking a partnership role with the self-help movement, providing that needed expertise for those in need of help and support without taking away any of their prerogatives.

This, again, requires an aggressive, forward-thinking approach. These people and organizations work with some of the most serious public health problems we face today: substance abuse, including cigarettes; AIDS; heart disease; cancer. You can't play in this league without knowing today's rules. If traditional medical providers are to become involved in this self-help area — and my inclination is that they should — then continuing medical education is not a luxury, it is a necessity in dealing with contemporary health problems.

CME, of course, is not a new idea. It predates Hippocrates. But, it is in this century that continuing medical education has made the transition from a vague notion of what physicians should do in their spare time to a more programmatic, better-defined enterprise. When formal CME began in the 1900's, it was little more than remedial education to make up for gaps in medical school training. To a large degree, it stayed that way until the 1930's. That's when a schism started to appear, cleaving the physicians of that time into two groups. The extraordinary scientific advances of that early part of the century created a gap between those physicians who stayed up-to-date on new developments and those less inspired practitioners whose learning ended with their degree.

The profession became very concerned about the wide extremes in health care quality being provided to patients, and sentiment grew that if members were not monitored more closely internally, then government agencies might step in to do so. Where have I heard that before? Given the number of states that currently have mandatory CME laws on the books, I would say their concerns had a tinge of prophecy in them. Soon CME took on a more definite form as academia, community hospitals and clinics, and, later, private entrepreneurs began providing educational services. A further catalyst to progress was the explosion of biological science research and development during World War II and, subsequently, the acceleration in government-sponsored research at the National Institutes of Health. So that's where continuing medical education stands today, a decentralized, diverse array of programs offered by a variety of sponsors.

Now, the question asked in the title of my address, "Why CME?" seems absurd on its face. After all, this is a concept centuries old. It is inherent within the science of medicine. There seems to be little reason for me to have come 3, 000 miles to answer the question, "Why CME?" And yet, we all know that all is not nirvana, that there are physicians who do question the quality and organization of continuing education as it stands today. There are those who resent attending lectures that they feel tell them what they already know. There are those who feel they are spending too much money, wasting too much time for programs that have limited value. There are those who question CME's basic value, saying that there is no empirical proof that CME is truly effective in changing physician practices in any meaningful or lasting way. They ask the rhetorical question, "Can you make good doctors out of bad ones by making them attend CME exercises?"

I want to make a few points of my own regarding continuing medical education, some observations, suggestions and criticisms. But first, let me dismiss some irrelevancies.

Does CME make bad doctors into good ones? Probably not. But that's not the province of adult education. The question of bad doctors falls within the parameters of peer review, not CME. Furthermore, I don't believe that the validity of continuing medical education is dependent upon whether or not we can support it with empirical data. It was Plato that said, "Education is a lifelong process." Now that is true for all people, but none more so than for those of us in the medical profession. Ours is a continual learning experience. That is understood in the oath we take. Our patients demand it. Our profession demands it. You don't need a double blind study to validate the need for continuing education. Now, having said that, I also believe we must shape CME to meet the growing needs of physicians in the 1990's.

While I believe there is something to gain from classroom lectures and journal readings in conveying important, broad-based information, effective CME in today's world must go a step beyond. If CME's goal is to help practitioners provide better care to their patients, then truly effective CME must be more targeted to specific patient needs.

This is a case in which modern technology can be utilized to bring about greater personal care. Through the use of personal computers and modems, physicians can link their offices to universities, to hospitals, clinics, and data bases. In fact, I have been campaigning, and will continue to lobby for, stronger data collection at the National Library of Medicine to make it possible for doctors to draw upon those resources from the convenience of their offices. Data links can even be used to share information from colleague to colleague rather than waiting for a chance meeting in a corridor or cafeteria.

I also believe the providers of continuing education have to do a thorough self-examination to determine whether they are doing justice to their programs. Are they giving them sufficient priority? I have seen too many CME managers at organizations and institutions who don't make their programs as strong as they could possibly be, because they aren't given the staffing or the resources to do so. And it is no secret that the CME programs at medical schools are the weak sisters on campus. Many school administrators don't like the programs, don't really understand them, and, in general, give them short shrift.

As a result, what we have too often is continuing education that resembles junior high lectures and slide shows. That is not without value, but we can do so much better. The technology is there. The resources can be there. All that is lacking is the inclination to do so.

Providers and consumers of CME need to realize that we are in an awful mess in reference to health care in this country. We have all sorts of people in business, in Congress, in the profession calling for a national health service. We have doctors disliking their patients and we have a public less than satisfied with their physicians. I do not believe it had to develop that way and might not have if those responsible for CME had faced the changing times, issue by issue, and had developed less expectation on the part of the public and trained doctors to be more responsive to the needs of patients.

In CME, the shoe is on the other foot. Physicians are the consumers in this arrangement. They need to be demanding consumers, making their needs known and insisting upon CME befitting medical care in the 1990's. CME is not just new pharmaceuticals and new procedures. It is keeping up with attitudes in and about medicine. Those who are learning have the obligation to demand what they want and need. And the educators have a responsibility to give the kind of education physicians need, but don't necessarily want. Medical professionals must be demanding because they have demanding constituencies. The public is insisting, rightfully so, on doctors who are not only caring and concerned, but who have also already absorbed yesterday's new medical developments.

We have several imperatives before us.

We have an elderly care imperative. A greater proportion of medical treatment in the years ahead will be devoted to the nation's fastest growing population group, those 65 and older. We are in the midst of a senior citizen boom, and it will affect the way we approach health care in the United States. All too often, elderly care is perceived as little more than patient maintenance, managing the patient's inevitable decline in his or her twilight years. But elderly care should be so much more than that, and can be when the practitioner is motivated and well-versed in contemporary geriatric practices. The aging process can be a living process, not a dying one. Human aging can be sickness-free, disease-free, just like any other period in one's life. Among other things, it takes a caring physician with both the inclination and the knowledge.

We also have a children's imperative. So many children in this country have a dire need for quality health care. On one front we have the 12 million children who grow up in poverty, the largest single group of poor people in the United States. These are children from families without access to health care. They are unlike the aged poor who, at least, have Medicare and, sometimes, Medicaid. Poor children, very frequently, have no access whatsoever to medical treatment. And then there are the abused children, the victims of family violence. This is an issue that comes to light periodically when an extreme case is discovered. But, all to often, child abuse goes undiscovered and thousands of little boys and girls suffer in silence. When we talk about continuing medical education, we would be remiss if we didn't concentrate upon the training necessary to recognize the health care needs of children in poverty, as well as to recognize the symptoms of child abuse. We must utilize CME to save young lives.

Medicine today is more than just straight textbook medicine. People are asking doctors to handle socioeconomic problems. And, although they can't be all things to all people, they do have to know something about the bridges and the gaps between the world of socioeconomics and the health problems associated with them.

We have a disease imperative, as well, specifically the disease called AIDS. After years of a disease with no cure and no vaccine, the profession is becoming complacent and the public — not identifying with people with AIDS — has assumed a we-they posture. No medical professional in the United States can afford to turn his or her back on this disease that will go on killing well into the next century. We have a tremendous responsibility to maintain strong support for programs that provide information to people at risk of getting AIDS, and we need to ensure medical services for those who never did get the message — and are dying. And, as difficult as it is, we must convince people with AIDS to change the behavior that gave them the disease. They have no incentive to do so. There's no carrot at the end of the stick, but we have to try anyway, for the sake of society, to stop the spread of the virus. That's why it is incumbent on every individual in the health care arena to learn as much as possible about AIDS, to spread the word as effectively as possible, to be effective combatants against this insidious disease.

And, finally, we have a preventive health imperative. Each of us, armed with the most up-to-date knowledge available, should be carrying the flag against one of the leading killers of our time, cigarettes. Yes, we have won some victories in this area. Per capita cigarette sales have declined each year since 1973. Smoking is no longer socially acceptable, and it is banned in more public places than ever before. But the battle is far, far from over. There are still 43 million Americans who continue to smoke, reducing their lifespans with each inhalation. More than 390,000 men and women die each year from smoking-attributable disease. Those numbers are constant reminders of why we must never become complacent.

None of us would have entered the medical profession were it not for our belief in the value of life and our calling to try to preserve and enhance life. Continuing medical education is a vital, indispensable tool in practicing our beliefs and pursuing our calling. Hippocrates once said, "Healing is a matter of time, but it is not a question of chance. We present greater opportunities for ourselves by acquiring greater knowledge. It is the essence of our profession.

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Educating Physicians in Home Health Care

AMA COUNCIL ON SCIENTIFIC AFFAIRS

HOME health care promises to play on increasingly central role in the future provision of health care as hospital care becomes restricted to acute "intensive care." Paradoxically, physicians have dramatically decreased their involvement in home health care in recent decades. This has resulted in a serious lack of medical leadership and participation at a time when home health care is experiencing an important renaissance. The recognition of this growing gap between actual physician participation in home health care and what might be considered optimal or even adequate physician involvement has prompted the American Medical Association (AMA) Council on Scientific Affairs and the AMA Council on Medical Education to recommend that training in the principles and practice of home health care be incorporated into the undergraduate, graduate, and continuing education of physicians.

Background

The field of home health care has experienced rapid growth in the past decade (Health Care Financing Administration data indicate an average annual growth rate of 20%).[1] Medical technology has been adapted from the hospital to the home setting, and new home-specific technology, with an emphasis on safety, reliability, and simplicity, is being developed. An expanded array of professional services is now available in the home.[2] The home health care boom has come about, in part, as a cost-containment effort. A growing number of acute care problems can be managed entirely in the home or have management completed in the home after a brief stabilizing hospitalization at a significant savings to funders. It should be noted that home health care is most often not cost-saving for the patient and family. Rather, it is likely to add costs related to additional care giving and nonreimbursed expenses. Nevertheless, patients and families often express that home health care is their preference for acute and postacute care. Home health care frequently best addresses the long-term needs of older persons and those with chronic illness, such as technology-dependent children (eg, ventilator) and persons with the acquired immunodeficiency syndrome. All of the current legislative proposals on long-term care incorporate a significant home health care component.[3]

The above developments in home health care have come about without the leadership or significant involvement of physicians. Since the mid-1940s, physicians have had decreasing involvement in home health care. Over the past 40 years, technological advances in office and hospital-based care, better transportation and communication, and more geographically dispersed practices have all contributed to the decline in physician-provided care in the home.[2]

Today's physicians, when surveyed, typically list four major objections to involvement in home health care: (1) poor reimbursement, (2) time efficiency, (3) medical liability, and (4) concern that they cannot provide the usual quality of care without their full complement of diagnostic facilities and support staff.[4] Although all of the

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From the Council on Scientific Affairs, American Medical Association, Chicago, Il.

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objections are substantive, they must be reexamined in the light of the growing importance of home health care for multiple patient groups and recent advances in the home health care industry.

Poor reimbursement and time inefficiency are closely linked, and, to the extent that physicians are needed or expected to play a meaningful role in home health care, these problems must be addressed. Most physicians do not mind providing an occasional home visit for compassionate reasons. However, financial disincentives discourage committing significant time to home visiting or even to the telephone supervision of other professionals in the home.

The other physician objections to home health care, compromised quality and medical liability, need closer examination. A recent survey of primary care physicians participating in the home health care management of ventilator-dependent children suggests that perceptions of quality care in the home and the willingness to take liability risks may be changing.[5] The quality and spectrum of services available in the home have increased dramatically in the past decade, and some physicians are aware of these advances.

High-technology home health care has attracted nurse clinician specialists, therapists, and other professionals such that staffing of home health care agencies rivals the breadth and expertise found in many hospitals. The broad satisfaction of patients and families with care in the home suggests that they perceive the care to be of high quality. More objective measures of the quality of care in the home are needed, and the Health Care Financing Administration, Joint Commission on Accreditation of Health Care Organizations, and peer review organizations are actively pursuing better methods of quality assurance.

So far, medical liability associated with home health care has been more of a theoretical rather than a real problem. Despite the potential liability exposure associated with providing complex care in a less structured and less controlled setting, legal actions against physicians for home health care are virtually nonexistent to date. Patients and families seem to view care in the home differently and apparently are less inclined to pursue litigation when problems and mistakes occur.

Rationale for Physician Involvement in Home Care

With such apparent disincentives, it is important to identify the positive motivations for physicians to participate more actively in home health care. Perhaps the most compelling rationale is that home health care is arguably the best choice of care for a growing number of patients, most notably those persons who are homebound with chronic diseases and who have adequate social supports. In addition, the cost benefits for acute and postacute care in the home can be significant, often approaching half the cost of comparable care in the institutional setting. As noted above, this cost benefit accrues largely to funders of health care. But physicians may contribute to the conservation of health care resources by encouraging home health care alternatives to more expensive care. Home health care also takes advantage of psychological and social benefits of the familiar environs of the home and the care giving of family and friends. Home health care is clearly the expressed preference of older persons with long-term needs.[6] It provides the support to care giver and patient that allows continued independent living, often at a higher level of physical and mental functioning and with less risk of iatrogenic complications. Home health care is also the most appropriate and compassionate care setting for many persons with acquired immunodeficiency syndrome[7] and other terminal illnesses. Finally, providing care in the home for chronically ill children, especially those dependent on medical technology, promotes the emotional growth and participation in the family that are critical to normal psychological development.

A significant yet less tangible benefit of physician home visiting is the professional satisfaction experienced when providing care in the patient's home. The home visit is a powerful statement of the physician's commitment to the relationship with the patients and, in turn, earns the high regard and gratitude of the patient and family. This is a potent antidote to the claims of deprofessionalization of medicine.[8,9]

Goals of Physician Education in Home Care

The overall goal of a home health care curriculum is to provide physicians-in-training with the requisite knowledge and experience to enable them to appropriately incorporate home health care practices into the usual clinical management of their patients. This educational process entails the usual classroom exposure to information and related clinical experiences for the practice and mastery of skills. But, most important, the education of young physicians requires the role modeling of professional values and practices by respected mentors. Since some graduate programs and medical schools may not have experienced and committed home health care mentors, a faculty development program may be needed before attempting a graduate or undergraduate curriculum in home health care.

The following competencies or goals of the home health care curriculum have been identified by a literature review and consultation with physicians and other home health care experts regarding activities necessary to practice effective home health care. Although these curricular goals are specifically intended for the training of primary care specialists (pediatricians, family physicians, internists), all medical specialists can benefit from some exposure to home health care principles.

1. Physicians should acquire appropriate skills in home health care assessment. Most of the information-gathering and examination skills that a physician acquires in training are directly applicable to the patient assessment in the home setting. In addition to patient and care giver assessment, the physician must learn to assess the home environment for safety, functionality, and maintenance requirements. Even the neighborhood should be evaluated for transportation and shopping access, safety, and other social supports (church, senior center, neighbors). Often other members of the home health care team can contribute this kind of information to the overall assessment.
2. Physicians should be able to assess the adequacy of family care givers and informal care resources. A critical component of most home health care is the availability, competency, and reliability of family, friends, or personal assistants who have been identified as the primary care givers. The physician must carefully assess what the care givers can realistically contribute and must determine if that is adequate for the patient's needs. Family care giving must be supplemented with additional education. Indications for respite or professional service must be assessed periodically to monitor adequacy and potential care giver problems such as burnout.
3. Physicians should be able to evaluate the efficacy of home health care efforts and contribute to improved quality assurance in home health care. Physicians should be able to compare morbidity and mortality of home health care with those of its alternatives and assess patients' and care givers' satisfaction with care. In addition, the field of home health care has been developed largely on empirical standards. Physicians must be active in establishing a scientific basis for home health care and developing quality improvement programs based on expected outcomes.
4. Physicians should be able to apply home health care principles and guidelines appropriately. The physician must be familiar with the general guidelines for selecting and managing home health care patients and be able to modify them appropriately, including knowing when and how to refer patients for nonphysician home services. Rehabilitation and prevention of further disabilities are important aspects of physician home health care planning and management. Also, physicians must be aware of special protocols for problem-specific situations if they intend to provide more complex home health care (eg, care for persons with the acquired immunodeficiency syndrome, chemotherapy, ventilator care).
5. The physician should know community resources. To take full advantage of home health care options, physicians must know the spectrum of available community resources. This should include knowledge of professional and voluntary services. It may not be necessary for a physician to know the specifics of each provider of services in the community. That is the specialty of other members of the home health care team. But physicians must know generally what care options are available in the community. Physicians, by virtue of their regular contact with patients, are a critical conduit of home health care services to patients and often represent the patients' only contact with the health care system.
6. The physician should be knowledgeable about cost reimbursement policies in home health care. In recommending home health care services and options, physicians must be aware of the costs of various services and procedures, the reimbursement likely from Medicare/Medicaid or private insurance, and the potential for additional personal costs to the patient or care giver. In addition, the physician should be aware of the approximate cost of institutional alternatives to home health care and how the cost burden might be borne differently in various settings.
7. Physicians should be knowledgeable about home health care technology. Some of the most significant recent developments in home health care have to do with the adaptation to the home of technology such as the various parenteral therapies available (antibiotics, chemotherapy, transfusion of blood and blood products, anticoagulation by heparin infusion, etc.) In some cases, referral to appropriate medical specialists who provide home health care may greatly benefit the patient. Many of the technological advances can be managed by most physicians alone or with specialty consultation. Since high-technology home health care is often associated with the management of acute illness, it is more likely to entail a physician home visit for assessment and monitoring.
8. Physicians should be able to integrate home, office, and hospital care for patients. Optimal use of any care setting requires knowing its strengths and the indications for its use as well as its limitations. Home health care fits in the spectrum of care bridging the institutional settings of hospital and long-term care facility. Physicians must learn when to use home health care in their practice and when to make transitions into and out of that setting. Likewise, the clinical information gathered in the home setting must be well documented and systematically integrated into the patient's record and available to the patient's hospital and office/clinic, as well as home health care, chart.
9. The physician should play an active and major role on

the home health care team. The physician is responsible for planning and supervising most home health care, and physicians' home visits should be an important part of home health care. However, the majority of care will be provided by other professionals. Thus, for home health care to be effective, the physician must have experience and rapport with multidisciplinary teams. The traditional hospital or clinic model of physician dominance is not as appropriate as a team or collaborative model. The physician should be aware of the skills and abilities of all members of the care team and call on them to the fullest for the benefit of the patient and the efficiency of care. An important aspect of team involvement is maintaining adequate communication with other home health care professionals, especially by being available when they need problem-solving assistance.

10. Physicians should demonstrate that they value home health care as part of their practice. This is an attitudinal goal that is best evidenced by physician behavior that demonstrates an appreciation or valuing of home health care through appropriate use. Physicians will come to value home health care when they understand its contributions to the broader (biopsychosocial) health model. Physician education and experience in home health care will demonstrate the benefits to patients and families and will lead to improved patient-physician relationships.

Although these goals are listed together as the core content for a home health care curriculum, they could easily be treated separately as modules or topic areas for continuing medical education or adapted to an undergraduate curriculum. Such curricula could draw on the growing body of literature on physician involvement in home health care.[10-14]

Summary

A growing proportion of health care, especially long-term care, should best and most appropriately be provided in the home setting. Physicians have largely remained on the periphery of this reemerging area of health care. Yet if home health care is to reach its full potential, physicians must fulfill their essential role as members of the home health team. Direct physician input and participation are needed to ensure that home health care is safe and medically appropriate. Physician involvement will enhance the supervision of medical care in the home, and physicians' expertise is also much needed for home health care quality assurance and clinical research. Role models and training experiences must be developed for new physicians so that they can integrate home health care skills and values into their future practices. Although most of the usual physician objections to home health care involvement can be addressed by education, the problem of inadequate reimbursement is substantive and must be addressed by policy change.

Recommendations

In view of these concerns, the AMA Council on Medical Education and AMA Council on Scientific Affairs recommend that:

1. Faculties of the schools of medicine be encouraged to teach the science and art of home health care as part of the regular undergraduate curriculum.
2. Graduate programs in the fields of family practice, general internal medicine, pediatrics, obstetrics, general surgery, orthopedics, physiatry, and psychiatry be encouraged to incorporate training in home health care practice.
3. The concept of home health care as part of the continuity of patient care, rather than as an alternative care mode, be promoted to physicians and other health care professionals.
4. Assessment for home health care be incorporated in all hospital discharge planning.
5. The AMA develop programs to increase physician awareness of and skill in the practice of home health care.
6. The AMA be represented and foster other physician participation at all present and future home health care organizational planning initiatives (eg, the Joint Commission on Accreditation of Health Care Organizations, American Society for Testing and Materials, Food and Drug Administration).
7. The AMA encourage a leadership role for physicians as active team participants in home health care issues such as quality standards, public policy, utilization, and reimbursement issues.
8. The AMA recognize the responsibility of the physician who is involved in home health care and recommend appropriate reimbursement for those health care services.

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All Massachusetts Physicians and Hospitals Liable for Deficit

All Massachusetts physicians and hospitals were liable to pay the deficit incurred by the Joint Underwriters Association because of inadequate insurance premiums, the highest court of Massachusetts ruled.

The Joint Underwriters Association was established during the 1975 malpractice crisis to provide coverage to physicians and hospitals on proof that they have made a reasonable effort to obtain malpractice insurance and have been unable to obtain it. The purpose of the Association was to provide medical malpractice insurance on a self-supporting basis. In its 1988 rate filing, the Association included a request to begin to recoup its $140,000,000 deficit resulting from inadequate premium rates charges to physicians for the years 1975 through 1982. It proposed that the deficit be recovered from all licensed physicians in the Commonwealth over a five-year period.

After a hearing, the hearing officer concluded that all physicians and hospitals in the Commonwealth, regardless of where they obtained their malpractice insurance, would be subject to recoupment. The Commissioner of Insurance adopted the hearing officer's recommendation.

Affirming the decision, the highest court of Massachusetts said that the statute permitted recoupment from all physicians and hospitals in the Commonwealth. Liability for recoupment of shortages was one of the many conditions of licensure which the legislature through its police power may impose on physicians and hospitals, the court said. The statute was not an unconstitutional delegation of the power to tax, the court added. The Commissioner could recoup deficits caused by inadequate premium rates charged to physicians from hospitals.—*Risk Management Foundation of the Harvard Medical Institutions, Incorporated v. Commissioner of Insurance,* 554 N.E. 2d 843 (Mass. Sup. Jud. Ct., May 23, 1990)

—*The Citation,* January 15, 1991

Patient Care Quality for Alcohol and Drug Related Trauma Treatment

CONNECTICUT STATE MEDICAL SOCIETY

TRAUMA is a primary indicator of the underlying medical condition of alcohol or drug abuse. Traumatic death and injury is a preventable disease insofar as alcohol/drug abuse is a treatable condition. The most common indicator of this condition is not cirrhosis or OD or DT's; it is trauma. Substance abuse related traumatic deaths and injuries are the most under-recognized public health problems facing our state. Most desirable are educational and legal approaches that can prevent such trauma in the first place, but so often the first medical manifestation of alcohol or drug abuse is "accidental" trauma. This may also be the ideal, and perhaps only opportunity for medical diagnosis and treatment to prevent recurrence of such trauma.

Therefore, the CSMS Committee on Public Health decided not to recommend making alcohol/drug related traumatic injury a "reportable disease" or to pursue other legislative or regulatory approaches, but instead to approach such trauma for what it is, a medical quality assurance challenge, since the *medical* means of reducing future morbidity is known: the appropriate diagnosis and treatment of any underlying substance abuse if present. Implementation provides unparalleled opportunity for the medical profession to help, and at little cost. Even modest success in preventing repeat trauma would reap substantial human and economic savings. Therefore the following was recommended to the CSMS Council and adopted at its 10 January 1991 meeting:

The CSMS recognizes that alcohol or drug related trauma is a problem of major proportions at Connecticut's hospitals. Such patients are common and their injuries frequently serious. We believe that early diagnosis and treatment can reduce the risk of repeated trauma and ruined lives. We recognize that it is the physician's responsibility to become educated about alcohol and drug related trauma, to learn how to identify such patients, and to enable proper interventions to take place to address any underlying condition of substance abuse. Therefore, the Society favors the following:

1. **Chemical testing for BAC/other drugs is recommended as a clinical standard for injured individuals. Blood alcohol levels and urine drug screens should be considered for all trauma patients under treatment. Children under 14 years of age and students injured during school sports will be excluded from testing, unless there is a suspicion of alcohol or drug involvement.**
2. **The attending physician will address the issue of a positive blood alcohol level or positive urine drug screen in a trauma patient through appropriate and confidential referral, consultation, or treatment for any underlying condition of substance abuse.**
3. **Ongoing quality assurance evaluations should be performed six months apart after approval of this policy.**
4. **Continuing medical education in diagnosis and treatment of drug and alcohol abuse will be promoted within hospital medical staffs.**
5. **Individual clinicians, committed to the effective treatment of alcohol/drug related trauma patients, ask that the institutions in which they work make a similar commitment so that appropriate procedures may be developed.**

A Subdermal Progestin Implant for Long-Term Contraception

THE MEDICAL LETTER

THE *Norplant System* (Wyeth-Ayerst) for subdermal delivery of the synthetic progestin levonorgestrel was recently approved by the US Food and Drug Administration for use as a long-term contraceptive.

DELIVERY — The drug is sealed into 2.4 x 34 mm cylindrical capsules made of *Silastic*, a siloxane copolymer. Six capsules, each containing 36 mg levonorgestrel, are implanted subdermally on the inside of the upper arm through a 2-mm incision. The progestin slowly diffuses through the wall of the capsules into the blood, providing concentrations sufficient for contraception for up to five years (K Adadevoh et al, *Bull WHO* 1985; 63:485).

PHARMACOKINETICS — The amount of levonorgestrel released from the implants begins at about 80 to 85 micrograms daily; after one year, in one study, the device released about 30 to 35 micrograms daily, which is similar to the amount contained in oral progestin-only contraceptives (DN Robertson et al, *Contraception* 1983; 27:483). Levonorgestrel is metabolized in the liver at a much slower rate than endogenous progestins. Plasma concentrations vary widely, presumably due to individual differences in metabolism and body weight. Five to 14 days after removal of the implants, the drug is no longer detectable in plasma.

MECHANISM OF ACTION — Exogenous progestin decreases, but does not stop, secretion of the gonadotropins FSH and LH; ovulation is suppressed in some patients. When ovulation does occur, progestin-induced thick scanty mucus prevents sperm migration. Constant low levels of progestin also suppress endometrial development and growth, and may suppress progesterone secretion during the luteal phase.

EFFECTIVENESS — The failure rate for *Norplant* in about 1000 users was four or five per thousand users per year; for oral contraceptives, the rate is 20 to 50 per thousand per year (CW Bardin, Int J Fertil 1989; 34 suppl:88). The failure rate is higher, however, in heavier patients; women weighing more than 70 kg have a cumulative pregnancy rate, according to the manufacturer, of 8.5 per 100 users over a five-year period. Pregnancy may also be more likely in implant users who take phenytoin (*Dilantin*, and others) or carbamazepine (*Tegretol*, and others) concurrently. After removal of the implant, in one study, 50% of those desiring conception became pregnant within three months and 86% within one year (D Shoupe and DR Mishell, Am J Obstet Gynecol 1989; 160:1286).

ADVERSE EFFECTS — Most patients have irregular, increased, decreased, or prolonged menstruation, especially during the first year; infrequently, bleeding can be severe, but in some patients with implants, serum hemoglobin concentrations have increased. Infection has occurred at the site of implantation in about 1% of patients, and other local reactions (hyperpigmentation, numbness, swelling, tenderness) in about 5% (SK Klavon and GS Grubb, *Contraception* 1990; 41:27). Enlarged ovarian follicles that cannot be distinguished from ovarian cysts can occur, but usually regress spontaneously; rarely, they may burst or rupture, requiring surgery. One uncontrolled study in 205 women with implants found that headache occurred in 24% and acne in 15% (PD Darney et al, Stud Fam Plann 1990; 21:152). Breast discharge, weight gain, hirsutism, scalp hair loss, mastalgia, cervicitis, leukorrhea, vaginitis, nausea, dizziness, and musculoskeletal and abdominal pain have also been reported. Some exogenous progestins have increased serum lipid concentrations, but *Norplant* apparently does not (K Singh et al, *Adv Contracept* 1990; 6:11).

CONCLUSION — *Norplant* subdermal implants containing levonorgestrel provide safe and effective contraception for five years without compromising fertility. Menstrual irregularities and other adverse effects may make the implants unacceptable to some patients.

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The Future of Psychiatry

AMA COUNCIL ON LONG RANGE PLANNING AND DEVELOPMENT

The American Medical Association Council on Long Range Planning and Development has been publishing a series of reports that assess trends in the environment of medicine and their impact on physicians and health care provision. The Council believes each specialty in medicine will respond differently to changes in the health care arena. This report, developed in cooperation with the American Psychiatric Association, provides an overview and environmental analysis of the specialty of psychiatry. Socioeconomic data pertinent to psychiatry are reviewed first, followed by a review of scientific and clinical developments in the specialty. Next, the changing provision patterns of psychiatric care, the emerging patient populations served by psychiatrists, and recent developments in graduate medical education in psychiatry are reviewed. The Council also addresses changes in the financing of psychiatric care. In conclusion, the Council suggests implications of these and other environmental trends for psychiatry.

THE American Medical Association Council on Long Range Planning and Development has been publishing a series of reports that assess trends in the environment of medicine and their impact on physicians and health care provision.[1] The Council believes each specialty in medicine will respond differently to changes in the health care arena. The practice of psychiatry in the 1990s will be shaped by a variety of demographic, economic, political, and scientific factors. In cooperation with the American Psychiatric Association, the Council has examined trends in the environment of medicine and their implications for psychiatry.

Socioecomonic Trends in Psychiatry

Demand for Psychiatric Services

The current and projected demographics of the US population, among other factors, indicate a continuing strong demand for the services of general psychiatrists, adolescent and child psychiatrists, and geriatric psychiatrists. As with a number of other medical specialties, psychiatrists will continue to face competition for the provision of services from other physicians as well as a variety of nonphysician providers. Challenges to the definition of the scope of the practice of psychiatry will have implications for the future reimbursement patterns for mental health services, for the practice of psychiatry, and for the care patients receive.

An estimated 9.6 million people or 4.3% of the civilian noninstitutionalized population had one or more ambulatory mental health visits in 1980, according to estimates from a major National Institute of Mental Health (NIMH) study of mental health in three US communities.[2] Of those persons with one or more mental health visits, approximately 25% were seen by psychiatrists in office practice; another 25% were seen by psychologists in office practice; 40% were seen in office settings by other providers, such as nonpsychiatrist physicians or social workers; and the remainder were seen in organized settings, such as hospital outpatient departments, emergency departments, and specialty mental health clinics.[2]

In the United States, within any 1-month period, ap-

Members of the Council on Long Range Planning and Development include John Kimball Scott, M.D., Chairman; C. Burns Roehrig, M.D., Vice Chairman; Charles N. Aswad, M.D.; Kim A. Bateman, M.D., Alfred J. Clementi, M.D.; Howard D. Epstein, M.D.; Neale P. Freeman; Jonathan E. Rhoads, Jr, M.D.; Alex Scott, M.D.; Robert S. Stone, M.D.; Thomas M. Gorey, J.D., Council Secretary; and Suzanne M. Meyering, M.A., AMA Department of Long Range Policy Analysis, consulting author. Former members of the council, Palma E. Formica, M.D., and Samuel P. Solish, M.D., are also acknowledged for their contributions to the manuscript.

From the Council on Long Range Planning and Development in Cooperation with the American Psychiatric Association, American Medical Association, Chicago, Ill.

This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined based on all of the facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the views of scientific literature as of June 1989.

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proximately 15% of adults meet the diagnostic criteria for psychiatric disorders, according to estimates derived from studies of several communities by the NIMH.[3] Almost 20% of those surveyed in the NIMH study had one or more psychiatric disorders in the preceding 6 months; of those with a psychiatric disorder, anxiety disorders (29.4%) and substance abuse (24.4%) were the most prevalent.[2] Phobias and affective disorders such as depression were most common in women; alcohol abuse/dependence and phobias were most common in men.[2] Similarly, an estimated 12% of the childhood population have psychiatric disorders, which vary in severity and do not all require treatment. Each year, over 25 000 children are hospitalized for more than 90 days for psychiatric disorders and there are more than 10 000 children with major psychotic disorders who are not hospitalized.[2] In 1987, the 684 nonfederal psychiatric hospitals were 86% occupied. Between 1977 and 1987, admissions to nonfederal psychiatric hospitals increased by approximately 9%, but the average length of stay declined sharply from 131 days in 1977 to 81 days in 1987, reducing inpatient days in psychiatric hospitals by 32% in the 10-year period.[4] In 1987, the number of patients discharged from short-stay hospitals was 73.7 per 10 000 population for mental disorders and 13.9 per 10 000 for alcohol dependence syndrome.[4]

Providing Psychiatric Care for the Poor

The future holds a major challenge for psychiatry and the mental health care system: provision of and reimbursement for psychiatric care to the poor—especially poor people who have chronic disabling psychiatric or neuropsychiatric illnesses (such as schizophrenia, manic-depressive illness, and sequelae of traumatic brain injury.) A central issue in mental health care is the lack of an adequate supply of appropriate and high-quality services throughout the mental health care system for the poor, including state psychiatric hospitals, ambulatory care centers, and psychiatric units in acute care hospitals.[5] A major problem facing large city hospitals and large not-for-profit teaching hospitals is providing short-term emergency services and inpatient care to poor psychiatric patients; typically, reimbursements do not cover the cost of providing the care. Many institutions that traditionally offered psychiatric care to the disadvantaged are closing or are no longer in a financial position to provide such care.

Problems of providing psychiatric care for the homeless are related in part to the poor funding of community mental health psychiatry. Since the psychiatrically impaired homeless often avoid contact with the health care system, mobile outreach services will continue to be an important way to help these individuals obtain food, clothing, and medical and psychiatric care.[6] The Institute of Medicine's Committee on Health Care for Homeless People recommends that the first priority in addressing the problems of the mentally ill homeless must be to ensure the adequate availability of clinical services (including professionally supervised supportive housing arrangements).[7]

As primary care physicians for the poor, many emergency department physicians will continue to confront a variety of complex challenges as providers of psychiatrist and medical care to poor children and adolescents, the elderly, victims of rape and domestic violence, and drug abusers.[6]

Changes in the Financing and Management of Psychiatric Care

Containment of health care costs has become a major issue for both public and private payers. Psychiatrists and mental patients, historically the victims of social stigma and misunderstanding, have been particularly affected by cost-containment efforts. It will be increasingly important for physicians in other specialities to join with psychiatrists in efforts to diminish the stigma often associated with psychiatric disorders and to help those in need receive appropriate care. Maintaining effective alliances with consumer and professional groups, such as the National Alliance for the Mentally Ill, will be critical for assuring that appropriate resources are allocated by the private and public sectors for mental health services, training, and research. These alliances can provide a unified voice of support for accessible care for the poor, especially the poor who are chronically ill.

Never, since the inception of third-party coverage for medical services, has psychiatry achieved parity with other medical services, and the emphasis on cost containment has caused an already bad situation to deteriorate even further. In 1983, fifty-three percent of employed workers surveyed by the Bureau of Labor Statistics had coverage for inpatient treatment of mental illness that was equal to their coverage for other illnesses; in 1986, the percentage was only 37%.[8] The outlook for coverage of outpatient treatment has always been bleak: in 1986, only 6% of the participants in the Bureau of Labor Statistics survey had coverage equal to that for other illnesses; separate annual dollar limits, low annual limits on number of visits, low limits on dollars per visit, and significantly greater copayment levels affect the majority of people covered. These limitations serve as a deterrent to access to care and may compromise the quality and continuity of the care that is received, especially for the poor.[8]

The burgeoning managed care industry has further eroded mental health benefits. Federally qualified health maintenance organizations (HMOs) are required to offer 20 outpatients visits, a minimum that has become the maximum for most HMOs. In addition, HMO copayments are much more common for mental health services than for other medical services, and inpatient coverage in HMOs is generally more restrictive than underinsured

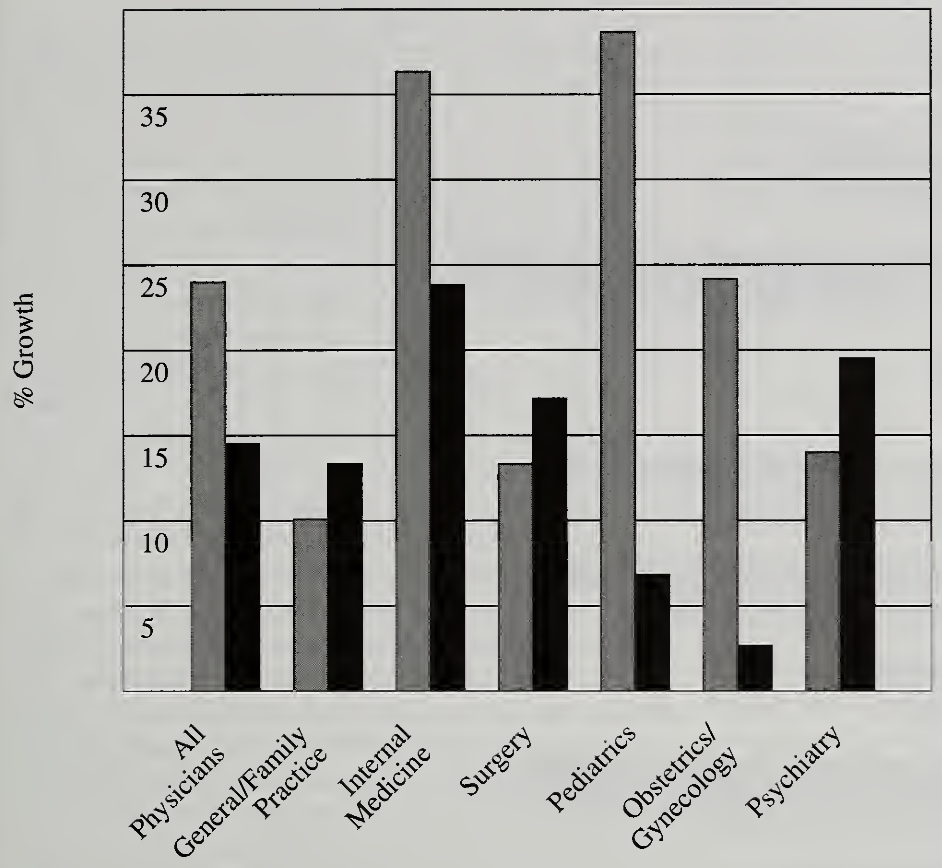

Figure 1
The projected growth rates of physician supply and utilization, by specialty, from 1985 to 2000. Stippled bars indicate supply; solid bars, utilization.

plans: only 4% of HMO participants receive inpatient mental health benefits equal to those for other illnesses.[8]

Organized medicine and consumer mental groups have publicized these disparities, but progress in lessening the restrictions has been slow. This has potentially serious implications for patients and their families. Concerns for cost containment may result in undertreatment—premature discharge from the hospital or failure to use treatment modalities considered too specialized or costly. Such concerns may also inhibit coverage for alternative treatment settings such as partial hospitalization or residential treatment centers for adolescents and children that, ironically, could in the long run decrease overall treatment costs.

Cost-containment policies for psychiatric services are being implemented and strengthened at a time when, largely as a result of research, mental disorders can be diagnosed and treated much more effectively than in the past. Modern psychiatry offers a variety of treatments, whereas a generation ago it was limited to psychotherapy, a few medications, and long-term hospitalization. Thanks to a wide range of antidepressant medications and other therapies, the majority of people with depression can now be treated successfully. With an expanding class of antipsychotic medicines, the severity of hallucinations and delusions can be reduced in most patients with schizophrenia, allowing many to live productively in the community. Antianxiety agents are helping millions escape the crippling effects of severe anxiety, debilitating phobias, and panic disorder.

Studies indicate that prompt, high-quality treatment of mental disorders can result in a decrease in other medical costs. Such treatment also has been shown to lead to increases in employee productivity, decreases in absenteeism, and less employee turnover. As major purchasers of health insurance, employers will continue to seek cost-effective treatment alternatives for their employees. Psychiatrists have an excellent opportunity to identify and document the benefits of treatment alternatives for patients and their employers.

Trends in Numbers of Psychiatrists in Practice

Approximately 6% of all US physicians designate their specialty as psychiatry or child and adolescent psychiatry, according to data collected by the American Medical Association on the Physicians' Professional Activities Census; as of January 1, 1988, there were 33 679 general psychiatrists and 4107 child and adolescent psychiatrists in the United States. In the last 5 years, the number of general psychiatrists increased by 10% and the number of child and adolescents psychiatrists increased by 14%; the number of all physicians increased by 12.7%.[9]

Consistent with the findings of the Graduate Medical Education National Advisory Committee Report,[10] which predicted a shortage of general and child and adolescent psychiatrists, data developed by the American Medical Association's Center for Health Policy Research indicate that between 1985 and 2000, the number of psychiatrists may be insufficient to meet demand. The number of psychiatrists is projected to increase by 14%, substantially less than the increase predicted for physicians overall (24%).[11] For the same period, the Center projects a 19.1% increase in utilization of psychiatrists' services, which exceeds the projected 14% increase in utilization for physicians across all specialities (Fig 1).[12]

As of January 1, 1990, there were 204 programs in general psychiatry and 121 programs in child and adolescent psychiatry among the 6591 residency programs.[13]

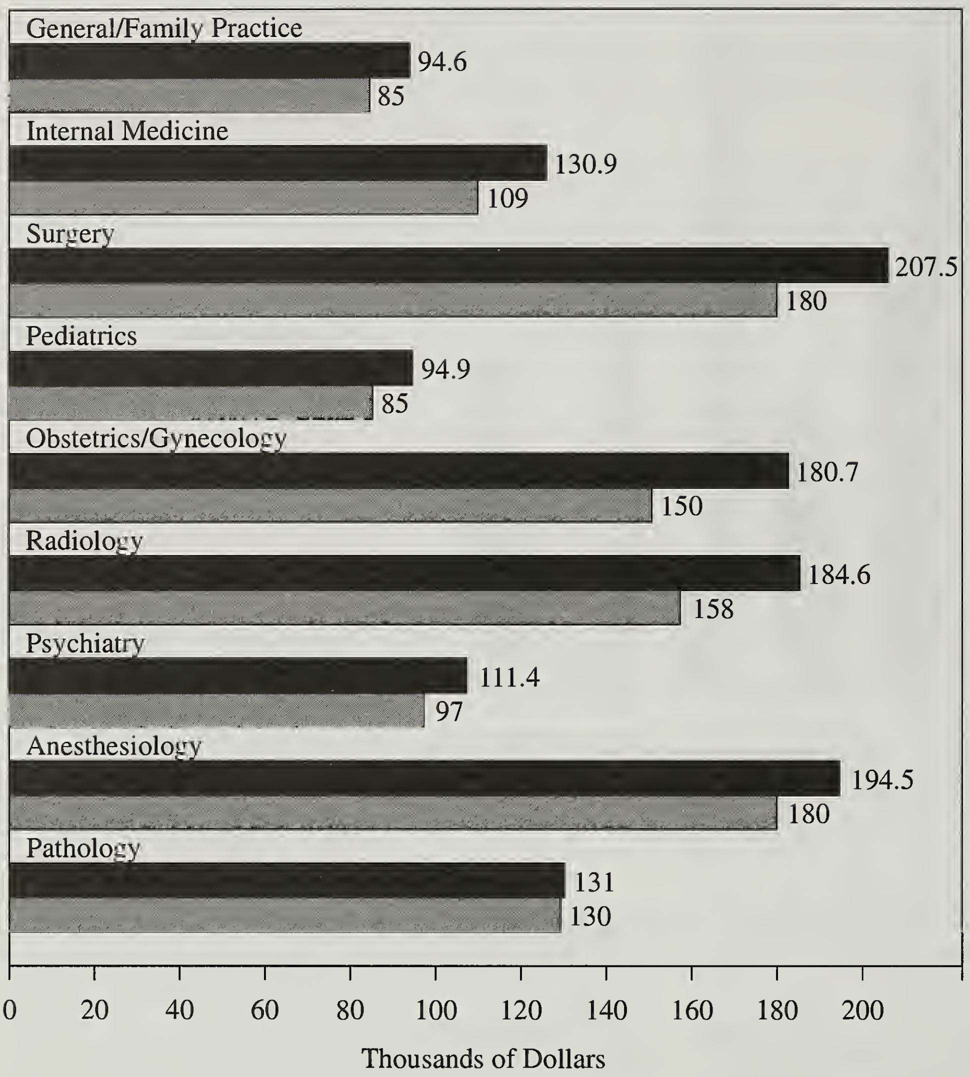

Figure 2

The average and median physician net income, by specialty, after expenses and before taxes, for 1988. Stippled bars indicate average; solid bars, median. Data adapted from *Socioeconomic Characteristics of Medical Practice 1989*.[21]

Residents in general psychiatry accounted for 6% of the 1989 resident physicians; residents in child and adolescent psychiatry accounted for 1% of 1989 resident physicians.[13] The total number of psychiatry residents on duty as of September 1 decreased slightly from 5488 in 1985 to a projected 5118 for September 1989. Included in these totals are residents in child and adolescent psychiatry whose number increased from 585 to a projected 673 during the same time period.[13]

Demographic Characteristics of Psychiatrists

The numbers and percentages of women in residency programs have been increasing steadily. In 1988 through 1989, 42.7% of the residents in psychiatry were female, up from 37.6% in 1984 through 1985. There were 582 more female residents in 1988 through 1989 than in 1984 through 1985; the number of male psychiatry residents increased by only 154 during that same period.[14] Women residents in general psychiatry and child and adolescent psychiatry now constitute 10% of the women in all residency programs.[13]

Twenty-four percent of all psychiatrists are women; the representation of women in the total physician population is 16%.[9] However, the growth in the percentage of women in psychiatry over the 5-year period between 1983 and 1988 was slightly less than the growth in the percentage of women in medicine overall. Between 1983 and 1988, the total number of female physicians increased by 33.2%. In comparison, the number of female general psychiatrists increased by 27%, and the number of female child and adolescent psychiatrists increased by 23% during this period.[15] Although the number of women in medical schools and in residency programs has increased dramatically since the 1970s, the number of women physicians who serve in administration, as heads of departments, and on specialty boards has not kept pace; gender stereotypes are changing, but slowly.[16]

Approximately one fourth of general psychiatry residents (22.8%) and child and adolescent psychiatry residents (28.0%) are graduates of non-US medical schools. These percentages are similar to the percentages of graduates of foreign medical schools in general pediatrics (25%) and general internal medicine (22%), but are greater than the percentage of foreign medical graduates in the resident physician population overall (15.3%). Five percent of all resident physicians are black; a similar percentage is found among psychiatry and child and adolescent psychiatry residents.[13]

In 1988, there were 13.6 psychiatrists per 100 000 population, up slightly from 1985 (13.3) and 1983 (12.9).[9] Half of all psychiatrists are located in California, Illinois, Massachusetts, New York, Pennsylvania, and Texas. Psychiatrists tend to practice in metropolitan areas, as do many other specialists.[15] However, demand for psychiatrists, especially child and adolescent child psychiatrists, is expected to continue to increase in nonmetropolitan areas.[17]

Practice Patterns in Psychiatry

In addition to providing direct patient care, many general and child and adolescent psychiatrists devote some time to other professional activities such as administration, medical teaching, and research, and many work in more than one setting. Psychiatrists are now more likely to devote at least part of their practice hours to salaried and managed care settings, including HMOs, preferred provider organizations. and large hospital systems. The percentage of nonfederal psychiatrists in group practice increased from 9% in 1980 to 15% in 1988; for all nonfederal specialists, the percentage of physicians in group practice increased from approximately 26% to 30%.[18]

Cooperation and consultation between psychiatrists, primary care physicians, and other providers will continue to be important for the provision of comprehensive care to patients. Especially in rural areas, primary care providers are critical gatekeepers for the diagnosis and treatment of psychiatric problems. The detection of mental disorders and the treatment of the less-severe disorders, including the prescription of medications, often take place in a primary medical setting. Primary care physicians, however, are less likely than psychiatrists to treat patients with serious or complex mental disorders, such as patients with dual diagnoses or comorbidity of psychiatrric and medical illnesses. Primary care physicians are more likely to prescribe medications for anxiety, while psychiatrists are more likely to prescribe drugs for depression.[19]

Psychiatrists' office visit fees are determined in large part by the amount of time spent with the patient. Visits with an established patient run 45 to 55 minutes; a diagnostic examination involves at least that much (and often more) face-to-face contact, in addition to further interviews with family, teachers, and others. The mean fee charged by self-employed psychiatrists in 1988 for an office visit with an established patient was $95 for an individual session, $97 for a family group session, and $134 for a diagnostic examination.[20]

In 1988, the mean net income after expenses but before taxes was $111 400 for psychiatrists, compared with a mean net income of $144 700 for physicians overall. The median net income for psychiatrists was $97 000; for all physicians it was $120 000 (Fig 2).[21] Total expenses for self-employed psychiatrists averaged $56 670 in 1988, compared with an average of $140 800 for all self-employed physicians.[22] Self-employed psychiatrists worked an average of 49 hours a week in 1988, they spent an average of 33 hours treating individuals, approximately 4 hours per week seeing family and nonfamily groups, and the remaining hours in other professional activities.[22]

While trends in professional liability have adversely affected all physicians, the financial effect on psychiatrists has been less severe than that experienced by other physicians because psychiatrists have been less often involved in professional liability suits. Psychiatrists paid an average of $4400 for liability insurance in 1988, while physicians overall incurred average professional liability premiums of almost $16 000.[21] From 1985 to 1988, however, psychiatrists' professional liability premiums increased at a considerably faster rate than for physicians overall. During this period, the average annual rate of change in professional liability premiums paid by psychiatrists was 20.7% compared with 14.8% for physicians overall.[21] A continuation of this trend would pose a serious challenge to this specialty. The types of lawsuits filed against psychiatrists are beginning to change; although most claims involve suicides, drug treatments, or electro-convulsive therapy, suits for failure to warn or protect third parties from dangerous patients are increasing.[23]

In 1988, 84% of physicians received some of their revenues from Medicare. For those physicians, Medicare revenue constituted, on average, 31% of their total revenues. Among psychiatrists, 61% received some revenue from Medicare. For these psychiatrists, the average percent of revenues from Medicare was 14%, which is essentially unchanged since since 1984.[21]

Scientific and Clinical Trends in Psychiatry

Environmental, psychological, and biological factors play a part in human behavior. Understanding disease mechanisms and recognizing that mental functioning is related to physical functioning are important components of psychiatric care. Psychiatrists are aware of the relationship between the immune system and stress and the relationship between anxiety, depression, and other illnesses. For example, feminist psychiatrists are having an impact on the practice of psychiatry by using a biopsychosocial perspective to expand the profession's and patients' understanding of women's experiences.[24]

The role of the psychiatrist in primary prevention will be enhanced by the expansion of research in emerging fields such as neuropsychiatry,[25] which has increased psychiatrists' understanding of the effects of medications on brain mechanisms and has improved diagnostic techniques. Clinical neuropsychiatry is developing rapidly as neuroscience research continues with the expansion of technological innovations in practice. A fundamental scientific question currently facing psychiatry is how the brain as a biological system operates to support human cognition, affect, and behavior. Neuropsychiatric researchers are learning what factors operate within and on the brain to disrupt normal behavior.

Studies of positron emission tomography and single-photon emission computed tomographic scans will aid future understanding of schizophrenia, affective disorders, obsessive-compulsive disorder, and panic disorder. Magnetic resonance imaging studies have shown that many patients with the acquired immunodeficiency syndrome (AIDS) exhibit changes in the brain and may have symptoms of dementia and other neuropsychiatric complications before other symptoms. Magnetic resonance imaging studies may also alert clinicians to early signs of Alzheimer's disease. Experiments in brain tissue transplantation may present new opportunities to treat diseases that affect brain function, such as Alzheimer's disease.[26,27]

The basic biological science of human behavior is one of the fastest moving scientific fields in all of biomedicine.[28] The goal of current genetic research on affective disorders and schizophrenia is to identify the genes that code for these major mental disorders. The results of these studies have significant implications for early diagnosis and treatment of mental disease in the future. The continuing discoveries of genetic markers for biopsychosocial disorders will lead to advances in genetic counseling. Psychiatrists will continue to be involved in assessing these developments for their applications to clinical practice.[27]

The strong emergence and expansion of the scientific base of psychiatry continues to influence the understanding, diagnosis, and treatment of mental disorders.[26-31] Diagnostic nomenclature for psychiatry has improved in validity and reliability; greater uniformity in the application of diagnostic criteria will continue to improve communication among mental health professionals.[26] The use of diagnostic interviews is likely to continue to improve the empirical base and foster more research on particular disorders. Explicit criteria and a focus on observable phenomena for making diagnoses are strengthening the match between treatment and diagnosis and will lead to increasingly differentiated therapeutic approaches. An emerging theme within psychiatric research is the disaggregation of heterogeneous groups of illnesses into diagnostic subtypes. For example, at least three different types of manic-depressive disorder have been identified. Similarly, subtypes of schizophrenia, Alzheimer's disease, obsessive-compulsive disorder, and other psychiatric disorders may be developed that will improve diagnosis and treatment. Psychiatrists are uniquely situated to apply these diagnostic subtypes and prescribe differentiated therapies as appropriate.[26]

Discoveries that have changed the clinical practice of psychiatry include the development of new antipsychotic agents, antidepressive agents, and the development of new drug treatments used in combination with psychotherapy for panic disorders, agoraphobia, obsessive-compulsive disorders, and eating disorders.[29] In addition to new medication, new and effective short-term psychotherapies are being used with individuals and groups of patients. Psychotherapies have evolved to include time-limited therapy, family therapy and behavior therapies, cognitive therapy, interpersonal therapies, and other forms of treatment and their combined utilization by psychiatrists. The integration of both pharmacological and psychotherapeutic treatments has increased the effectiveness of psychiatric care. Families of severely ill patients are now being made a part of the treatment process rather than being blamed for causing the disorder. New techniques of crisis intervention are used daily in hospital emergency departments, and new behavioral treatments for anxiety and phobic disorders are receiving increasing attention. In short, psychiatrists have learned to enhance the effectiveness of treatment by combining medication, psychotherapy, and behavioral treatments. As with all medical care, additional outcome studies are needed to more clearly demonstrate the efficacy of treatments for particular disorders.

Trends in Psychiatric Education and Practice

Graduate Medical Education in Psychiatry

The future of psychiatric education will be substantially influenced by research developments leading to innovative clinical care, changes in the health care provision system and its financing, the increasing number and diversity of health care providers, and the changing demographics of the US population. How training should be organized and evaluated will depend on the definition of future roles of psychiatrists, emerging content areas, and the practice sites.[30]

New educational methods will be needed to prepare resident physicians and practitioners for both traditional and new roles as psychiatrists of the future. Among the core skills needed for psychiatrists are the capacity for scientific thinking, interactive patient-oriented skills, leadership skills, and teaching skills. Currently, graduate medical education in psychiatry is typically 4 years in length. In the future, self-guided learning may become a major component of both basic and graduate learning, and continuing medical education will remain essential for professional development.[30]

The increasing diversity of care sites and the broader and expanded base of pharmacology and psychotherapies available for effective treatment will require residency programs to expand their curricula.[30] Funding of such programs will be critical. The balance of inpatient and ambulatory experiences is important, but currently, there is little funding available for ambulatory care.

Psychiatric training and practice will continue to be affected by AIDS. Treating AIDS patients presents many challenges and opportunities for psychiatric intervention. In addition to the neuropsychiatric complications of the disease, residents and other psychiatrists are faced with legal and ethical issues, psychosocial issues, and the comorbidity of psychiatric disorders. The psychiatrist's role as a consultant to other physicians will continue to be especially important in treating patients with AIDS. Since AIDS affects every aspect of mental health, psychiatrists can be trained to help patients cope with many issues, such as stigmatization, loss and dying, severe depression, dementia, dual diagnoses, and substance abuse.

Subspecialization in Psychiatry

General psychiatrists are certified by the American Board of Psychiatry and Neurology, which is governed by the American Board of Medical Specialities.[31] This board also certifies subspecialization in child and adolescent psychiatry. In addition to the first postgraduate year and a minimum of 2 years of accredited training in general psychiatry, a child psychiatry resident must complete at least 2 years of training in an accredited child and adolescent psychiatry program. The American Board of Psychiatry recently received permission from the American Board of Medical Specialties to offer a certificate of added qualifications in geriatric psychiatry; the first examination is scheduled for April 1991.

An issue of growing importance is subspecialization, both within the general residency program and in continuing medical education, in such areas as geriatric psychiatry, addiction psychiatry, forensic psychiatry, consultation liaison psychiatry, and administrative psychiatry. The American Psychiatric Association, concerned about maintaining unity in psychiatry and minimizing fragmentation, advocates that psychiatrists subspecialize in addition to general psychiatry and that certification in new subspecialty areas be defined as certification with added qualifications. Such certification generally requires at least one additional year (full-time equivalent) of training.

The general psychiatrist will continue to see a variety of patients, including increasing numbers of the elderly and persons with addiction problems, since the supply of subspecialists will not be able to meet the demand for services from these groups. The primary role for the subspecialists will be to enhance the knowledge base and to be available as consultants to the general psychiatrist.

Child and Adolescent Psychiatry

The future of child and adolescent psychiatry will be shaped by many of the same forces that will affect general psychiatry and medicine in general, including scientific developments, cost-containment initiatives, increasing competition, and growing expectations for documentation of the benefits of treatment.[32,33] Competition in this specialty will continue to come from psychologists, social workers, family therapists, and others. Pediatricians, especially those who specialize in behavioral pediatrics, are part of the competitive marketplace in which child and adolescent psychiatrists will practice. A projected strong demand for the services of child and adolescent psychiatrists in the next decade will present opportunities for practitioners in this specialty.[17]

Continued expansion of the scientific database in this subspecialty is critical for the future and will have an impact on the discipline's relations with medical colleagues, the public, and others. Research in the discipline has opened new areas with implications for future practice. Examples include research in genetics and the impact of genetic vulnerability, the psychopharmacological treatment of childhood and adolescent disorders, the effect of parental psychiatric disorder on child development, and the psychobiology of eating disorders. Other important areas are the diagnosis and treatment of disorders in the early-infancy period, affective disorders in children and adolescents, and the immediate and long-term effects of traumatic experiences. The future of child and adolescent psychiatry will be enhanced by efficacy studies that determine more precisely the relationships between treatments and outcomes.[32,33]

The recent increased utilization of psychiatric services by children and adolescents reflects both the increase in access to such facilities and the related decrease in the social stigma associated with seeking such care. The next decade will demonstrate the results of experimentation with innovative treatment settings for both psychiatric and substance abuse programs, and psychiatrists will have an opportunity to play an advocacy role in assuring that patients receive comprehensive medical treatment in these settings. New treatment services and approaches are improving the links between different agencies serving young people in the private and public sector. These approaches will be particularly critical for serving young patients with dual diagnoses—those with both a nonpsychiatric disorder and a psychiatric disorder—as well as those with substance abuse and another mental disorder. Such approaches of combined treatment are likely to employ shorter-term inpatient stays and longer-term ambulatory or partial hospitalization follow-up.[32,33] In addition, some of the future problems facing child and adolescent psychiatry include the disorders that can result form babies born to a drug-addicted mother, particularly those children born to women who have abused cocaine. Also, the number of adolescents with AIDS who will need psychiatric treatment is expected to increase.

Addiction Psychiatry

Addictions are the most common and the most costly psychiatric illnesses. While the training of subspecialists in the treatment of addictive illnesses has begun on a modest scale, it continues to increase at a steady rate.[34] The American Academy of Psychiatrists in Alcoholism and the Addictions has developed preliminary curriculum areas for the training of psychiatry fellows in alcoholism and drug abuse. A Center for Medical Fellowships in Alcoholism and Drug Abuse has been established to define fellowship training criteria and to begin to implement them.[34] It is likely that this type of fellowship training will have a multispecialty orientation; approximately two thirds of the 27 fellowship programs accept applicants from other medical specialties in addition to psychiatry. Addiction psychiatry is now recognized within the American Psychiatric Association by a new council and by committees on alcohol and drug abuse.

Psychiatric education in alcoholism and drug abuse is offered as a curriculum unit in nearly every US medical school.[35] Education experience in alcoholism and substance abuse is a requirement of the Residency Review Committee for Psychiatry of the Accreditation Council for Graduate Medical Education, so there is some exposure in each residency program. Research supported by the Alcohol, Drug Abuse, and Mental Health Administration will continue to have an impact on both training and clinical practice in this emerging subspecialty for which there is a well-documented need.[34,35] Subspecialty fellowships will enhance the scientific base and promote research and new findings, not only in the basic understanding of these diseases, but also in the health care provision system.

Geriatric Psychiatry

Mental disorders in old age are common and have multiple, complex origins. Their course is often complicated by the presence of organic brain involvement. Depression is the most common psychiatric disorder of the elderly; elderly white men have the highest suicide rate of any population group. It is estimated that over half of the 1.3 million patients in nursing homes suffer from Alzheimer's disease. The confusion and memory disturbance involved in Alzheimer's disease typically lead to incapacity.[36]

It has been projected that the number of geriatric psychiatrists being trained will be insufficient to meet the needs of an aging population that will require care for both psychiatric and medical disorders. Although currently the majority of geriatric psychiatrists have academic appointments, the two areas of greatest need are in academic geriatrics and long-term care settings.[37] The recent recognition of added qualifications by the American Board of Medical Specialties will assist in addressing the availability of manpower in geriatric psychiatry for both patient care and medical teaching.

As of 1986 there were 24 programs in geropsychiatry in the United States, and the number is growing. Among the geropsychiatry fellowship graduates, 95% of the physicians had previous training in psychiatry. Training programs will need to consider the balance that is achieved between caring for acutely ill older persons and providing long-term care experiences in both institutional and noninstitutional settings. Fellows will continue to need more opportunities for teaching and research and to develop the broad academic base to meet the demand for geriatricians and geropsychiatrists in the future.[37]

Conclusions and Implications for the Future

In summary, the following factors are likely to influence the future environment of psychiatry:

- Utilization of psychiatric services is projected to increase at a greater rate than utilization of general medical services and to outstrip the growth in supply of psychiatrists.
- New treatment approaches will improve the links between different service agencies in the private and public sector. These approaches will improve the links between different service agencies in the private and public sector. These approaches will be particularly critical for serving patients with dual diagnoses—those with both a nonpsychiatric disorder and a psychiatric disorder—as well as patients with substance abuse and another mental disorder. Such approaches of combined treatment are likely to employ shorter-term ambulatory or partial hospitalization follow-up.
- Treatment of and research on the severe and chronic mental illnesses will remain a central focus for psychiatry. As alliances between professionals and the public strengthen the voice of the profession and patients, there is likely to be a decline in the stigma associated with psychiatric treatment and a concomitant broadening of the sources of funding for mental illness services and research.
- The next decade will demonstrate the results of experimentation with innovative treatment settings for both psychiatric and substance abuse programs, and psychiatrists will have an opportunity to play an advocacy role in assuring that patients, including the poor, receive comprehensive medical treatment in the most appropriate settings.
- Developments in biomedical science and technology, such as molecular genetics, neurobiology, and brain imaging technologies, will provide a broader scientific base for clinical decision making.
- Even more valid and reliable diagnostic nomenclature will continue to improve psychiatric practice. Efficacy studies will be undertaken to demonstrate the value of specific diagnoses and treatments. Research on the outcomes of treatment will lend increased credibility to the profession, provide evidence of the value of medical treatment for mental health disorders, and strengthen the case for more equitable reimbursement of psychiatric care.
- Subspecialization in psychiatry will further advance the development of a body of highly advanced clinical and research knowledge, thereby providing a broader base of pharmacologic and psychotherapeutic approaches to the treatment of psychiatric disor-

ders. Subspecialization in psychiatry will continue to expand in the areas of child and adolescent psychiatry, addiction psychiatry, neuropsychiatry, and geropsychiatry, and demand for appropriate training opportunities for residents will increase.

In light of future trends, there are several avenues by which the medical profession can help ensure a favorable future practice environment for psychiatry:

- The psychiatrically ill must not be discriminated against economically.
- It is of critical importance that the rapidly deteriorating plight of the poor who require psychiatric services be recognized and remediated through the provision of governmental resources directed toward their care.
- Advocacy is needed to address the lack of services in the community, such as residential facilities and other types of intermediate-care facilities, for those who have chronic and highly disabling psychiatric illnesses such as schizophrenia.
- A primary objective will be the education of employers, health benefits officers, and consumers about the cost-effectiveness of expeditious mental health interventions.[38]
- Continued support for peer review of the quality, necessity, and appropriateness of psychiatric services, utilizing the resources of physicians and organized medicine as appropriate, will be vital.
- It will be increasingly important for physicians in other specialties to join with psychiatrist in efforts to diminish the stigma often associated with psychiatric disorders and to help those in need receive appropriate care.
- Maintaining effective alliances with consumer and professional groups will be critical for ensuring that appropriate resources are allocated by private and public sectors for mental health services, training, and research.
- Psychiatrists will be in a positions to serve as patient advocates, especially for those with major mental illness and disability, the aged, and those at risk for costly care.
- Active participation of psychiatrists and other physicians in the development of national mental health research agendas will provide opportunities for increasing public awareness of psychiatry's role in addressing major public health problems, such as chronic mental illness.

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50 Years Ago

From the *Journal of the Connecticut State Medical Society*

April 1941

Doctor Sigerist Prescribes

It is not to be denied that Doctor Henry Sigerist, who is the William H. Welch Professor of the History of Medicine at Johns Hopkins, is a distinguished student of the history of medicine in many lands. Whether he is a competent authority to prescribe a formula to cure the ills in the distribution of medical care in America has been debated.

In "Medicine and Human Welfare" (Yale University Press) Doctor Sigerist sets down some plausible arguments for government medicine. "Everybody rich and poor should have all the medical care that science can give. There is only one way of achieving this," says Doctor Sigerist, "the physician must be removed from the sphere of competitive business. We cannot think of a minister of the church, a judge or a professor selling his services in the open market. Private competitive medicine cannot solve the health needs of a nation..."

Doctor Sigerist has never ministered to the sick in this, his adopted country, but he has travelled everywhere and knows many American doctors and he observes: "While some physicians are fully aware of the trends of the time and have the courage to face the problem openly and to seek its best solution, others are afraid of any change." He goes further to say, "I am convinced that medicine, like education, will ultimately become a public service in every civilized country. All trends are in that direction." It is easy to agree with him in that idea and there is something faintly reminiscent about it for in October 1939 this JOURNAL published "I see that the people are coming to look upon medical care as a public utility, like electric power, needed by everyone and necessarily available to meet that need."

When he comes to "practice tomorrow will of necessity be group practice organized around a health station...," Doctor Sigerist moves into the sunny fairyland of inexperience, it is a deduction drawn beside the library hearth, not in the night in a New England blizzard.

All this may come "sooner than we commonly expect. The war which broke out in 1939 will destroy the laisser-faire attitude once and for all and will force social adjustments which have been neglected in the past." That sounds like truth for sure and Doctor Sigerist's prognosis may be better than his remedy.

—Editorial from *The Connecticut State Medical Journal,* April, 1941

Bed Patient

E. TREMAIN BRADLEY, M.D.

LYING in bed is a natural thing. We spend up to a third of our life lying there, so what is so special about a patient in bed? Most of us can climb in, turn over, wiggle, get out at will. Not so for many patients. Their position in bed often is determined for them. A hospital bed has a mechanism to elevate the head or the knees, most with buttons so the patient can operate them. If the head and torso are to be raised, a vertical foot board (*Conn Med* 1990; 54:347) should be in place to prevent the patient from sliding down. This will also maintain muscle tone and proper return venous flow in the lower extremities, and will keep the bedclothes up off his toes. Elevating the knees high in the hospital bed or using a pillow under the knees runs the risk of slowing venous return, promoting thrombosis, and even embolism. Soft absorbant padding under the buttocks and lower back discourages bed sores. Doughnuts under the elbows give good protection and comfort too.

Teaching the patient is important. He should be able to relax, sink into the bed, take a deep breath and "sigh," leaving the abdomen soft and the shoulders and neck loose. To turn over alone he should first move to one side of the bed by bending one or both legs and using them to raise the buttocks over to the side. Shoulders can be moved by pushing elbows hard into the bed. Head maybe raised with the chest, or can be pushed back against the bed to help raise the chest. These acts may have to be done in successive stages to get near the edge of the bed. Then outside arm and leg are moved across the body toward the other side, and the whole body automatically turns on its side and into the middle of the bed. A pillow behind the back will obstruct these maneuvers and is unnecessary because his top arm and leg are flexed across in front of him which prevents his rolling back. A (small) pillow between the knees—especially if they are boney—adds comfort and protection. It is much easier to change location while on one's back than on one's side. However, when *getting out of bed*, just stay in the middle, turn on the side (as above). The foot and knee will be beyond the side of the bed, ready to hang down as the "up" arm pushes on the bed next to the "down" shoulder, raising the torso back first. Patient is then sitting on the edge of the bed ready to stand up.

Should the patient have a decubitus ulcer or a low back operation (eg, pilonidal), he should not push the torso up, but nudge his chest face down over toward the middle of the bed before pushing up with both arms so that he assumes the standing position facing the bed. These procedures are simply reversed for getting back in. Even after abdominal surgery there should be little or no strain on the abdominal muscles or incision.

Our patient has slumped down in bed and needs to move up, and you have no other help. First, lower the head of the bed and be sure that the head pillow is out of the way. With patient's knees flexed, I put one forearm across behind his upper thighs. My other forearm goes behind the small of his back. The patient puts both hands around my neck ready to PULL, lifting head and freeing shoulders to slide on the bed. I free the lower back from friction by lifting and with my arm under the thighs pushing toward the head of the bed, while he pushes with his feet. I count "1, 2, 3, LIFT" to coordinate the effort.

How did the patient get in to the bed? From a stretcher, and even onto that from an operating table? Pretty important that he doesn't drop into the ravine between the two surfaces! A sheet is usually used for transport, but I like the added security of making a bridge with my arms and hands over to the far table, stretcher, or bed. I like to be sure also that the shoulders and pelvis move together, that the torso moves in one piece without twisting.

When moving someone from the lithotomy position, I like to bring the knees and feet closer together before lowering and straightening out the extremities. And we do this rather slowly.

Finally—when leaving a bed patient, my check list includes: call bell handy; no pressure of bedclothes on the toes; bedside table available, also phone and TV controls; and ask the patient if he wants anything.

A vertical footboard is strongly recommended for every bed patient.

E. TREMAIN BRADLEY, M.D., solo practice of general surgery; retired to Norfolk, CT.

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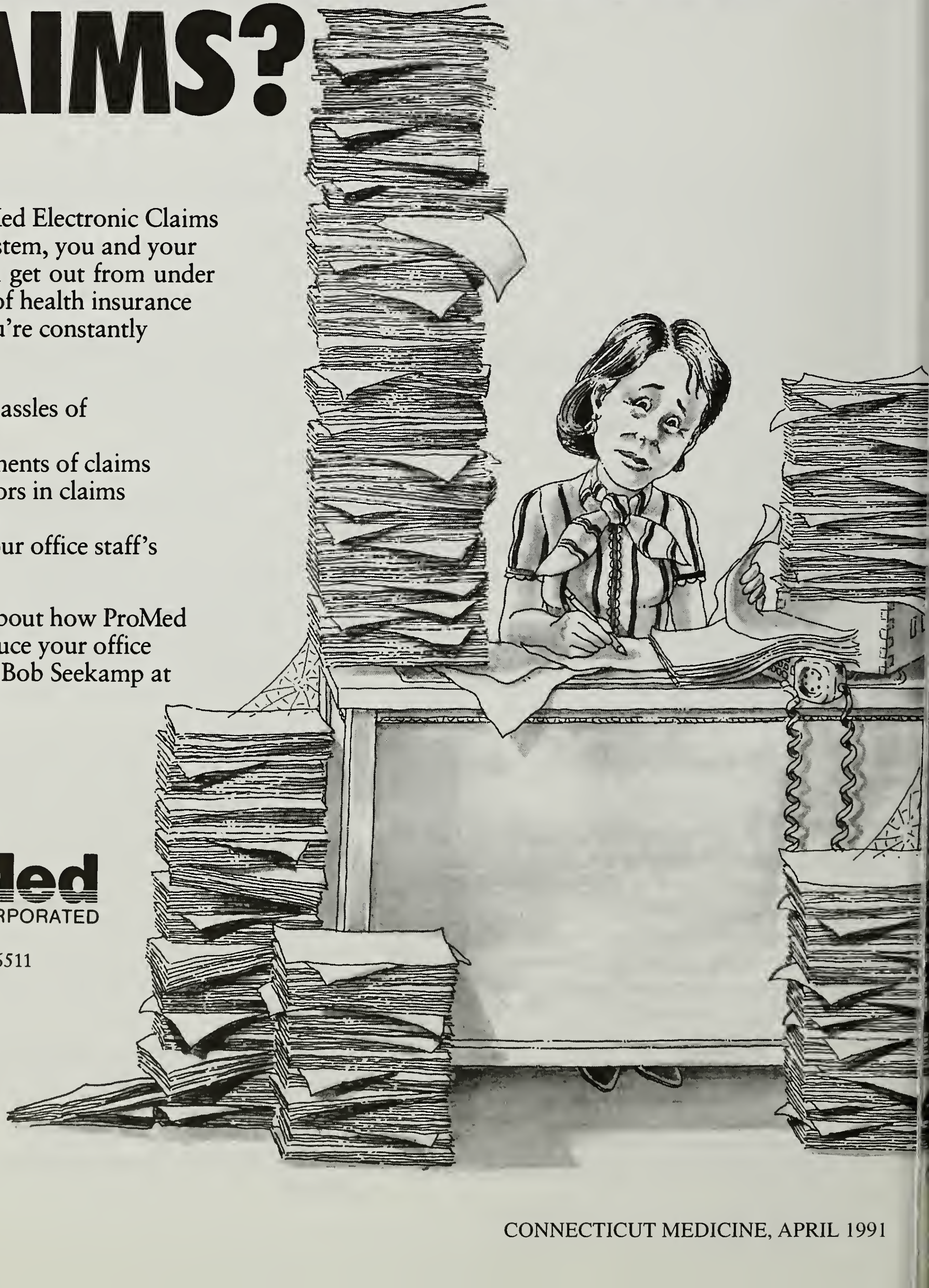

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Editorial

Trauma and Substance Abuse

Alcohol and other drug related trauma kills and maims more Connecticut teenagers and young adults than any other cause. Many of the injuries are permanent and tremendously costly in terms both of human grief and spectacular expense for families. Alcohol is the major cofactor in traumatic brain injuries in Connecticut and 500 new cases occur yearly here; some 70% of TBI's are substance abuse related. Out of 97,528 deaths in 1980 attributable to alcohol, *60%* involved trauma, not disease. More quadriplegia and paraplegia is caused by alcohol than all other causes combined. Such alcohol and drug related death and trauma occurs in every kind of setting, not just motor vehicles. Most trauma, in fact, involves alcohol or drug abuse on the part of the trauma patient, yet referral for treatment is rare or non-existent, even after a positive BAC or urine screen. (See references below.)

Trauma is a primary indicator of alcohol or drug abuse as an underlying condition. Thus traumatic death and injury is preventable insofar as alcohol/drug abuse is a treatable condition. The most common indicator of this condition is not cirrhosis or OD or DT's; it is *trauma.* Addiction-related traumatic deaths and injuries are the most under-recognized public health problems facing our state. Yet a *medical* means of reducing such morbidity and mortality is known. Its implementation is a matter of appropriate diagnosis and treatment at little cost, compared to the dire sequelae of leaving substance abusing trauma survivors untreated for their underlying addictive disease.

In 1990, these facts were brought to the attention of the Society's Committee on Public Health by Dr. Peter Rostenberg and other members of the Danbury Hospital medical staff, whose Department of Surgery had had a trauma/substance abuse policy for patient care peer review in force since 1988. The Committee proposed a similar policy for recommendation to the CSMS Council, which referred the proposal to the Committee on EMS for comment. The Council returned the proposal to Public Health with a number of practical suggestions for change from the EMS Committee. After these and other refinements, the Council approved the policy in its final form, which appears on page 227 of this issue of *Connecticut Medicine.* It is to be recommended to all physicians, medical staffs, and trauma facilities, for even modest success in preventing repeat trauma would reap substantial human and economic savings.

Robert J. Brunell
CSMS Director of Scientific Affairs

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CSMS Committees Work!

Besides the ongoing function of CME Accreditation of hospitals by our CSMS Committee on CME mentioned on this page last month, other CSMS Committees meet in season and out of season to carry on roles of health promotion, liaison with other health-related agencies, and coordination of common activities. Two such Committees deserve a special look, the CSMS Cancer Coordinating Committee, and the CSMS Committee on Public Health.

The effectiveness of the Cancer Coordinating Committee lies in that it functions as an informal meeting place and network for representatives from most of the statewide voluntary, medical, and governmental agencies interested in cancer control. These persons are involved in the Committee either as members or as consultants. The following groups are regularly represented: CSMS, Connecticut Oncology Association, American Cancer Society—Connecticut Division, Tumor Registrars Association of Connecticut, Connecticut State Tumor Registry, UConn Health Center, Yale Comprehensive Cancer Center, Cancer Control Research Unit of Connecticut at Yale, American College of Surgeons, Connecticut Hospital Association, Connecticut State Department of Health Services, and others.

CSMS has had an active Committee on Cancer ever since the Society was instrumental in helping to launch the world's first population-based tumor registry in 1935. The golden anniversary of Connecticut's Tumor Registry was celebrated in 1985 with a world meeting of the International Association of Cancer Registries in Hartford, and a special issue of *Connecticut Medicine*. More recently, the Committee has sponsored training for tumor registrars, has updated and distributed its well-received *Followup of Cancer* handbook for physicians, has helped to disseminate research findings, and discusses studies currently in progress on an ongoing basis.

Another very active group, our Committee on Public Health, has an even longer CSMS pedigree, and also functions as an informal forum for related organizations—not on an ongoing basis, but as issues arise. Member physicians include local public health officers and medical directors, physicians in corporate and occupational medicine, and physicians from the State Department of Health Services and the Department of Income Maintenance. Former Health Commissioner Frederick Adams, DDS, has been a frequent guest and participant.

Ever active, the Committee has initiated CSMS legislative support for MADD's "administrative per se" DWI bill. It has favored the appointment of more physicians on health-related public boards and commissions, and has supported legislation requiring universal prenatal screening for the hepatitis B surface antigen (HBsAg). Most recently, CSMS has adopted a quality assurance policy proposal for the appropriate treatment of underlying substance abuse conditions in trauma patients. It was developed and refined by the Committee on Public Health and is published on page 227 in this issue of *Connecticut Medicine*. Hopefully, it will occasion a reduction in substance abuse related mortality and repeat trauma.

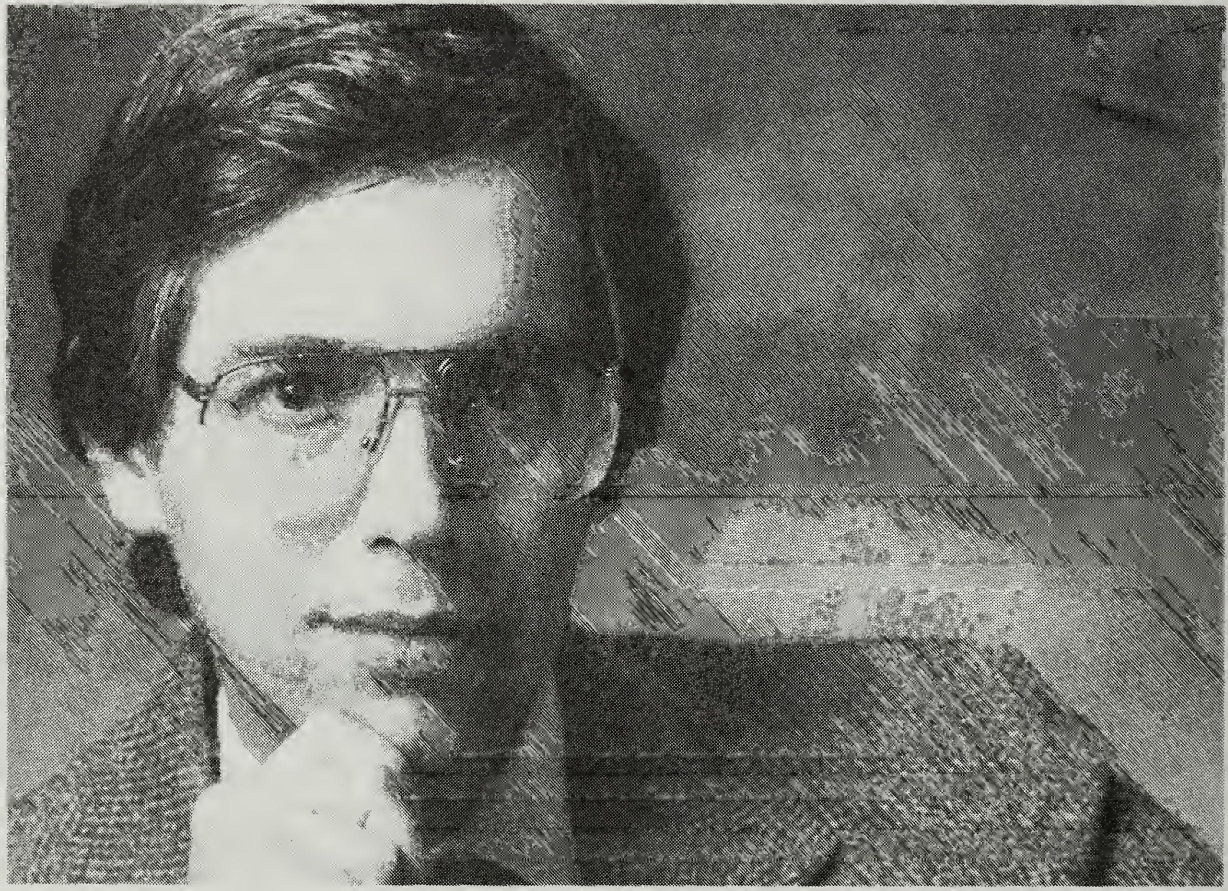
Other regularly active CSMS committees include the Committee on Organ and Tissue Transfers, which functions as the medical advisory committee to the Red Cross Blood Bank program, and our Committee on the Medical Aspects of Sports, with its frequent Symposia for school team physicians, coaches and trainers and its quarterly newsletter, *Connecticut SportsMed*. Our Committee on Physician Health is constantly at work counseling and monitoring physicians at risk of impairment under a protocol with the State Department of Health Services. Our three largest County Medical Associations have similar groups active.

A final special mention goes to the CSMS Committee on Geriatrics whose first Chairman, Dr. Andy Weinberg of Branford, is presently on duty in the Persian Gulf. In a brief time, this new Committee has published a patient information booklet on nursing home care, and has sponsored CME seminars for physicians active in geriatric care. Most recently, the Committee has organized a new CSMS specialty section for nursing home medical directors in our state. Its establishment is an item on the agenda of the the 1991 CSMS House of Delegates meeting in May.

Mehdi S. Eslami, M.D.
President

"My patients know a good health plan when they see one."

—Dr. Jeffrey Hertz, Ophthalmology, Norwich, CT



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REFLECTIONS ON MEDICINE

Deconstructionists: The New Crew

ROBERT U. MASSEY, M.D.

AFTER all, thought I, time is not such an invariable destroyer as he is represented. If he pulls down, he likewise builds up;...Under his plastic hand, trifles rise into importance; the nonsense of one age becomes the wisdom of another;...[1]

Several years ago an eminent classicist was asked to review a manuscript that had been submitted to a medical history journal that I edit. The author had taken some modest liberties with an ancient medical text, but the reviewer, with his penchant for linguistic accuracy, objected: "I don't take to this deconstructionist crap," he wrote. I softened his criticism but the author had no trouble understanding that a less free-wheeling translation was called for.

I could not have defined "deconstructionist" then, nor can I now. A philosopher friend tried to help me but admitted that at best the concept was elusive; at its worst it meant interpreting a text anyway you liked, "deconstructing" (destroying?) what the author had written, because the meaning, if indeed there is such a thing, is in *your* head, not in his. This had a familiar ring; I recall my 10th grade English teacher, a first-rate actor, whose rendition of Kate in *The Taming of the Shrew* I can still hear in my mind's ear, asking what Walt Whitman's *Song of Myself* meant to me, but I am sure she was trying to find out if I had any inkling of *his* point when Whitman wrote, "I celebrate myself, and sing myself,..."

For the deconstructionists *Die Fahne Hoch,* or lyrics from 2 Live Crew would do just as well, for another of their tenets is that no piece of writing is better or worse than any other; Dante and the Hartford phone book may have equivalent claims to our attention.

C.S. Lewis wrote about something like this in 1947 in a little book, *The Abolition of Man,* in which he criticized a new textbook written for "...the teaching of English in upper form of schools."[2] Out of charity he called it *The Green Book,* and attributed it to two educators, Gaius and Titus, who seemed "to be intending to make a clean sweep of traditional values...," persuading their young readers to interpret all texts subjectively, reminding them that authors may "*appear* to be saying something very important about something: and actually ... *only* saying something about [their] own feelings." And then Lewis added the argument that mattered: "By starving the sensibilities of our pupils we only make them easier prey to the propagandist...For famished nature will be avenged and a hard heart is no fallible protection against a soft head."

During interviews with medical school applicants I had become aware that, with some notable exceptions, those who had majored in the humanities seemed to know no more about literature or history than the science majors. This troubled me since I had been counseling undergraduates to get all the liberal education they could. Going beyond the required science courses, I assured them, rarely impressed admission committees.

I had forgotten that Gaius and Titus of the 1940s had meanwhile multiplied; their progeny were the 1960s crowd, and many of them were now in charge, radicals with tenure who have taken off their four-in-hands and replaced them with beads! Prof. Henry Louis Gates, Jr., a leading exponent of the "new crew," as English department chairman at Duke, Stanley Fish, calls them, remarked that "...a rainbow coalition of blacks, leftists, feminists, deconstructionists, and Marxists...are ready to take control...As the old guard retires, we will be in charge."[3]

When all of us are defined solely by gender, race, sexual orientation, and politics, and values are neutral and subjective, and when no one means what he says, anything goes; and of course an anything-goes society is an oxymoron. Another deconstructionist, Charles L. Griswold, Jr., of Howard University, has "alleged...that 'nothing in deconstructionism provides an ethical criticism of Nazism...deconstructionism dissolves notions of personal accountability and responsibility;... [it] renders theoreti-cally unintelligible basic moral terms such as good and evil.'"[4]

My cheerful philosopher reminded me that "movements always move on," and that this decade's academic silliness will become the footnotes of the 21st century. Meanwhile some students paying 20 thousand dollars a year to get a liberal education may be being cheated. For a while, if asked, I shall recommend they study classical Greek, sing in the glee club, take piano, and read on their own.

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AIR FORCE

Public Policy at the End of Life: A Legislative Agenda

JOSEPH M. HEALEY, J.D.

CONFUSION about the legal boundaries of decisions at the end of life in Connecticut is directly traceable to the two major statutes addressing these decisions: The Removal of Life Support Systems Act,[1] and The Power of Attorney for Health Care Decisions Act.[2] The first statute is a physician and health facility immunity statute masquerading as a living will statute. Its weaknesses have been raised and discussed before.[3] It purports to allow the next of kin a veto power over the patient's wishes about treatment. It purports to exclude nutrition and hydration from the list of interventions which are covered by the immunity provisions of the statute. It purports to confine the withholding or withdrawal of nutrition and hydration to cases involving patients in a terminal condition. The second statute acknowledges the use of a short form power of attorney to confer general authority with respect to health care decisions, but excludes decisions involving the withdrawal of life support systems or the withdrawal of nutrition or hydration, exactly the type of decisions many people using such forms wish to be included.

Both statutes reflect an unbalanced emphasis on fear of undertreatment and an avoidance of the problems arising out of overtreatment. This failure to address overtreatment and undertreatment in a fair, consistent manner is especially bothersome because many of the same values and principles underlying concern about undertreatment should provoke concern about overtreatment. These include: (1) respect for the dignity of the patient; (2) respect for the patient's right to choose; and (3) recognition that the goals of medical interventions and the means used to achieve those goals must be realistic, reasonable, and in proportion to each other. It is time for the Connecticut legislature to address the imbalance and to promote a more consistent, compassionate public policy. This may be achieved by amending the existing statutes to eliminate three areas of weakness.

First, the role of surrogate decision makers must be clarified and strengthened. When known to the health professional, the actual wishes of the patient should be followed. When such wishes have not been previously expressed to the health professional, it should be the responsibility of the surrogate to act consistent with the knowledge of the patient's wishes (applying substituted judgment) or to act in the patient's best interest, if the patient's wishes are unknown or cannot reasonably be inferred. The surrogate should stand in the patient's place, exercising the full rights of the patient. The health professional should serve as a safeguard to assure that the process is not contaminated by conflicts of interest.

Second, a recognition that the inappropriate withholding or withdrawing of treatment is a harm to be avoided must be balanced with a recognition that the inappropriate initiation or continuation of nonbeneficial treatment is likewise a harm to be avoided. Neither a perceived need to do "something" or to do "everything" nor a perceived fear of being sued should prompt health professionals to surrender their authority or their responsibility. Dying patients do not possess trump cards which entitle them to receive treatment independent of the justification required in all cases: (1) clear identification of the goals of management in the case; (2) identification of the means available to achieve those goals and the likely benefits and burdens involved; (3) assessment of the proportionality of the means and the ends.

Finally, artificial nutrition and hydration must be recognized for what they are. They are not simple food and water. They are medical tools to be used for specific ends. Their use or nonuse requires a judgment applying similar criteria as that applied in decisions involving other forms of medical intervention. Though there may be a strong presumption favoring their use, it must be acknowledged that there are cases in which their use is not medically, ethically, or legally indicated or required.

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1. Conn. Gen. Stat. Sections 19a-570 to 575.
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MEDICAL NEWS CAPSULES

The Month's Reading in Review

TIMOTHY B. NORBECK

- Juries were slightly more generous to medical liability plaintiffs in 1989 than in 1988, reports Jury Verdict Research, Inc. (Solon, Ohio)....The average verdict value rose about $3,000 to $1.11 million, but short of the $1.22 million peak reached in 1986. Defendants in medical liability cases that go to trial are more likely to win than are defendants in other types of personal injury actions...Juries decided for the defense in 57% of the medical liability cases in which doctors alone were defendants and 52% of cases in which both doctors and hospitals were named...The defense success rate in product liability cases was 41%.
- The St. Paul Group reports that while the number of claims of its insured physicians was 12 per every 100 physicians—down from 17 per 100 in 1985—the average cost of claims is still rising...Its claims costs in 1985 averaged $28,300 per claim compared to $36,000 per claim in 1989.
- According to a study undertaken by a Baldwin-Wallace economics professor, short people seem to live longer...Among Major League baseball players, the average life expectancy of those 6-feet-3 and taller was 66 years, while the average for players 5-feet-7 and shorter was 74...He also found in another study that men and women of the same height have about the same life expectancy.
- Twenty states had Hispanic populations of at least 100,000 in 1990, with Connecticut ranking 14th with a Hispanic population of 177,000 (another reason why CSMS is publishing some of its public health pamphlets in Spanish)...It is estimated that by the year 2000, the number will grow by 110,000 people to 287,000.
- According to a Texas Medical Association survey of 263 patient families who had collected malpractice damages from a physician, more than half reported that they had been so displeased by the doctor's attitude that they had wanted to sue even before the alleged malpractice incident occurred.
- While the federal government has been expanding the benefits that state-funded Medicaid programs must offer, an increasing number of states (Florida, Illinois, Kentucky, Missouri, Rhode Island, Virginia, and Washington) are taking action to limit the health-care benefits that employers must provide for workers...Nebraska, Illinois, and Indiana have passed laws that require future employee-benefits mandates to apply also to federally regulated self-insured plans—an effective maneuver that should curb enactment of new requirements.
- A recent Gallup survey indicates that only 8% of those polled thought that Medicare should be cut in order to reduce the federal deficit, and 88% were opposed to substantial cuts in the program...In a survey conducted for the Federation of American Health Systems, three out of four respondents favored increased Medicare spending.
- According to a study reported in *Inquiry,* for about half of those with no health insurance, their uninsured period ends within four months...Urban Institute researchers went on to say that only 15% are uninsured longer than 24 months.
- "Alzheimer's disease virtually never occurs before the age of 45 and is uncommon in the next two decades of life; thereafter the prevalence rises steeply."...Currently the disease is estimated to affect 11.3 percent of all people over 65...Richard Myers, M.D., associate professor of neurology at the Boston University School of Medicine, calculates that over a theoretical lifespan of 100 years of so, the likelihood of developing Alzheimer's would approach 16% for those with no family history of the disease and 24% for the first-degree relatives (parents, siblings, and children) of Alzheimer's victims.
- U.S. traffic fatalities have dropped significantly in the past 10 years...Greater seat belt use and a decline in alcohol-related deaths are responsible for the dip from 3.3 to 2.2 deaths per 100 million miles of travel between 1979 and 1989. (Note: A majority of adults, however, still refuse to wear seat belts.)
- According to an article by Paul Taylor in the Washington *Post,* a child in the United States is nearly twice as likely to be poor as a senior citizen largely because the federal government spends more than four dollars on the elderly for every one it spends on children...No other country has so large an age bias to its poverty rates nor so wide an age tilt in its allocation of resources.
- Alfred Adask, a Dallas-based roof-maintenance consultant, has just published the second issue of *AntiShyster,* a tabloid-sized newspaper devoted to berating the legal profession...4,000 copies of his first issue were distributed free, and he has been flooded with phone calls since...Dallas-based Valley News Bookstore has agreed to distribute the publication and has installed an 800 number to handle calls from all over the country (1-800-282-7323)...Dallas Morning News columnist Steve Blow, who had devoted a column to *AntiShyster*, received so many calls that he later published Mr. Adask's address.

TIMOTHY B. NORBECK, Executive Director of the Connecticut State Medical Society.

From the Executive Director's Office

COUNCIL MINUTES

Wednesday, April 3, 1991

Attendance

Present in addition to the Chairman, Dr. Joseph C. Czarsty were Drs. Ahamed, Beck, Blum, Bobruff, Brooks, Cottle, Dardick, Deren, Fox, Freedman, Hollister, Kamens, Keating, McDonnell, Orphanos, Parikh, Petrie, Petro, Redmond, Robbins, Wetstone, Wolfson, Zanker.

Also present: Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Mr. Garofalo, Ms. Ballou, Mrs. Connelly, Mr. Sullivan, Mr. Tomat (FCMA), Mrs. Clark, (HCMA), and Mrs. Harney (NHCMA).

Absent were: Drs. Chmieleski, Eslami, Franklin, Intravia, Lesnik, Meridy, Reyelt, Sadowski, Sosa, Van Nostrand, Welch, Zeppieri.

Chairman's Acknowledgement

Dr. Czarsty stated that he had two happy announcements to make, that our President-Elect, Anthony Redmond, M.D., was celebrating his birthday and that Isadore Friedberg, M.D., a past-president of CSMS, now of Richmond, Virginia, was visiting the Council.

Report on Related Organizations

CPRO: Edward Kamens, M.D. reported that they are favoring the issue of doing away with the preadmission review process for those procedures that are still being certified because it is causing a good deal of confusion for all and that they are awaiting for a reply from Health Care Finance Administration (HCFA) on this matter shortly and it is hoped that they will issue a favorable decision.

Uniform Clinical Data Set (UCDS) which is the automatic review of charts is now on line at CPRO. They are presently trying to get the hospitals interested in this system and eventually perhaps the hospitals will conduct their review on the UCDS basis. This systems flags the cases that should be reviewed by physicians. This system will also make available a great deal of epidemiological data and will also simplify the review of charts.

Report of the Executive Director

AMA Membership: Mr Norbeck reported that unless we increase our AMA membership by a minimum of 83 members, CSMS will lose an AMA delegate for 1992. The states are awarded one delegate per 1000 or portion thereof of their membership. CSMS has had an increase in AMA membership for eight consecutive years up to 1989, when the total was 4178. In 1990, it dropped 261 members to 3,917. Ten other states are facing the same situation. He reported that at the present time we are working with AMA officials to develop programs to promote AMA membership. There was lenghty discussion concerning this issue and it was finally VOTED to show a membership promotion tape at the House of Delegates meeting and also appoint an Ad Hoc Committee on AMA Membership to consist of the AMA delegation plus the senior councilor from any county that is not represented on the delegation. Dr. Petrie will serve as Chairman of this Ad Hoc Committee. The consensus was that the best approach to promote AMA membership was the one on one contact.

Report on CMMI and CMIC Activities

Mehdi Eslami, M.D., CMMI Chairman, submitted a written report which outlined the acitivities of CMIC. CMIC membership now exceeds over 2600 Connecticut physicians. Some of the highlights of the report were:

- Premium rate decreases for physicians in all risk classes.
- Discontinuation of surplus contributions for new members.
- Relocation of corporate headquarters to Glastonbury Connecticut.
- Legislative action pertaining to release of medical records to CMIC without specific permission from the patient.
- Educational program, Risk Management in the Office Setting.

Dr. Ahamed gave a verbal report in response to several questions raised on CMIC activities.

It was VOTED to receive the report as information.

Report of Pension Administrative Agency

Dr. McDonnell reported that the Pension Administrative Agency met with the Trustees of the Plan (representatives from the Bank of Boston) who are responsible for the investment of pension funds. The type of investments being used were reviewed to see that the funds are being invested at a reasonable rate of return. A check list was provided to all members of the Pension Administrative Agency outlining a list of requirements that must be met with each year to comply with federal regulations and the action taken by CSMS on these requirements. It was VOTED to receive this report as information.

Resolution on HIV Testing

The Ad Hoc Committee on HIV Testing which was appointed to review the action taken by the House of Delegates submitted the following report:

Reaching consensus, the Committee agreed that the current practice is appropriate and reasonable, and that Connecticut's regulations on AIDS-related testing and confidentially are generally acceptable, although amplification of the regulation's final sentence is requested. (P. 11f, subsection (4). The Committee recommends the following statements as substitutes for the resolution referred to the committee.

(a) Early HIV testing is to be encouraged on an individual basis for clinical reasons; we urge a different approach which avoids "group labels" but encourages increased usage of HIV tests at the physician's discretion with the patient's consent, based on individual indications and parameters reflecting patient benefit and appropriate clinical treatment.

(b) Secondly, legislation to single out health care workers for mandatory testing or disclosure of HIV-positive status is inappropriate. We encourage health care workers who consider themselves at risk of HIV infection to have themselves tested, and if positive, counseled.

(c) Third, HIV infection should be approached with the knowledge that early detection and early treatment is important and efficacious. Thus we can favor AMA Resolution 37, supporting classification of HIV infections as STD's and the attendant control measures. We stress the status of AIDS as an infectious disese, and urge physicians to utilize appropriately those existing Connecticut regulations which already treat AIDS as the infectious disease that it is, e.g. contact tracing, partner notification, etc.

It was VOTED to accept the report of the Ad Hoc Committee on HIV and transmit it to the House of Delegates with the Council's approval.

It was further VOTED to authorize the expenditure of $600 for the purchase of reprints of the 1991 AMA physician guidelines monograph, "HIV Early Care" to be used as inserts in *Connecticut Medicine,* subject to the approval of the Editor.

Legislative Update

Howard Wetstone, M.D., Chairman of the Committee on Legislation, reported on several bills before the General Assembly, the most important issue being the reorganization of the Connecticut Medical Examining Board, H.B. 6125, "An Act Concerning Disciplinary Hearings Regarding the Safe Practice of Medicine". A copy of the testimony given at the hearing was distributed to all members of the Council, together with a listing of the bills in which CSMS has an interest plus a letter from the Attorney General. H. B. 6125 is a bill to replace the State Medical Examining Board with a three-person panel, no more than one of whom shall be a physician, for expediting physician discipline, to be appointed by the Commissioner of Health. This panel, not the Medical Examining Board would be authorized to conduct disciplinary hearings and "to restrict, suspend or revoke the license or limit the right to practice of a physician". The Medical Examining Board would have no role except in the licensure process. The Attorney General became interested in this issue and in a letter to the Co-Chair of the Public Health Committee made several proposals that would alter H.B. 6125. One of the main proposals made by the AG was that the Board would retain its current composition and number. Also, all nominees will have to be approved by the legislature. Other proposals made outlined the opertion of the Board, etc. The Council VOTED to support the concept as outlined in the Attorney General's letter with the understanding that the protocol of the Committee on Physician Health Committee with the Department of Health Services would not be affected in any way and that any licensed physician could be nominated to the Board.

Dr. Wetstone briefly reviewed other bills dealing with:

- Disciplinary Hearings Regarding the Safe Practice of Medicine
- Banning the use of Schedule II Sympathomimetic Amines for diet purposes
- Employment Hours for Medical Interns and Residents
- Modernizing the Licensing Statutes for Podiatrists.
- Direct Access to Physical Therapist
- Certification of the Health of Members of School Athletic Teams
- Disclosure by Carriers of the Human Immune Deficiency Virus
- Treatment by Optometrists for Certain Diseases of the Eye
- Medicare Assignment
- Commitment of Mentally Ill Persons by Psychologists
- Secrecy in Civil Settlements
- Costs of Diagnostic Tests
- Utilization Review
- Comprehensive Workers' Compensation Reform

Petition For Formation of Section of Connecticut State Medical Directors of Long Term Care Facilities

It was voted to forward a petition from the Committee on Geriatrics to establish a CSMS Section of Connecticut Medical Directors of Long Term Care Facilities, without recommendation.

M.D. Health Plan: It was VOTED that Mehdi Eslami, M.D. continue to represent CSMS on the M.D. Health Plan Board of Directors.

N.B: *The foregoing is a summary of the proceedings and actions of the Council on Wednesday, April 3, 1991. Detailed minutes of the meetings are on file at 160 St. Ronan Street, New Haven, for perusal by any interested members of the Society.*

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1. Jones J: Necrotizing *Candida* esophagitis. *JAMA* 1980;244:2190-91.
2. Kremer H, Kellner E, Schierl W, et al. Ultrasonic diagnosis in infiltrative gastrointestinal diseases. *Dtsch Med Wochenschr* 1978;103:965-6. Abstracted, *JAMA* 1978;240:2784.
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4. Fischer DH: *Growing Old in America.* New York, Oxford University Press, 1977, pp 210-6.

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Acute Perforated Diverticulitis: Primary Resection and Anastomosis?

VICTOR A. MEDINA, M.D., GEORGE K. PAPANICOLAOU, M.D.,
RAAFAT R. TADROS, M.D., AND L. PETER FIELDING, M.B.

ABSTRACT—Surgical management of patients with acute colonic diverticulitis is evolving from multiple towards single operations. The patterns of presentation and treatment of 146 patients with acute perforated diverticulitis have been reviewed (1983-1988) using the Hinchey classification system (Stages I-IV). This paper focuses on the six patients who presented with fecal peritonitis (Stage IV disease), half of whom were treated by primary resection and anastomosis and the remainder by a Hartmann procedure. The mean length of stay was 18.7 ± 7.9 days and 12.7 ± 4.8 days with a mortality of zero and one, respectively. These data suggest that in selected patients who present with perforated diverticular disease, primary resection with anastomosis offers a possible alternative to other operative management. The presence of fecal peritonitis should no longer be considered an absolute contraindication to immediate bowel reconstruction. Furthermore, we suggest that this decision be based on the relative absence of concomitant disease, a satisfactory response to preoperative resuscitation, the availability of a surgeon experienced in colonic surgery, and attention to postoperative management.

Introduction

IN 1849, Cruveilhier gave a detailed description of colonic diverticula.[1] Clinical diverticulitis, however, remained essentially unknown until 1904 when Beer proposed that diverticulitis resulted from hardened fecal masses lodged in the false diverticula.[2] Today, diverticular disease is a common condition in the aging population in the western world, affecting over half the population by the eighth decade.

Surgical treatment of diverticulitis is reserved for those who experience recurrent exacerbations despite medical therapy or those who have secondary complications; bowel perforation, bleeding, obstruction, or fistula formation. Of these, perforation is the most serious complication and its surgical management remains a subject of controversy.

Mayo, in 1907,[3] pioneered the treatment for acute diverticulitis by suggesting external drainage of abscesses and treatment of obstruction by right transverse loop colostomy to defunctionalize the colon followed by resection of the obstructed segment at a later date. Thirty-five years later, Smithwick[4] established the relative safety of this three-stage resection for diverticulitis; proximal colostomy, resection of involved segment, and closure of colostomy. However, the long time to complete this regimen and its associated morbidity at each stage encouraged the development of two-stage or even one-stage resection. The Hartmann procedure,[5] which involves resection of the inflammatory sigmoid phlegmon and end colostomy with distal oversew of the bowel, was initially described as an alternative to abdominoperineal resection for obstructing carcinomas of the rectosigmoid junction. This procedure has become popular because the diseased bowel segment is removed but the risk of anastomotic leakage is avoided. However, subsequent bowel reconstruction can be technically difficult and is associated with a significant complication rate. Other authors have described immediate resection followed by primary bowel anastomosis on selected patients, but the use of this method remains controversial.[6-21]

Historically the choice of procedure has been influenced by the degree of peritoneal contamination, which is a major determinant or prognosis[19-25] and may account for the varied mortality rates in the surgical management of perforated diverticular disease.[25-27] Differences in surgical management and outcome may also be attributed to the ability of the surgeon to effect the needed result.[28]

We report our experience with six consecutive patients

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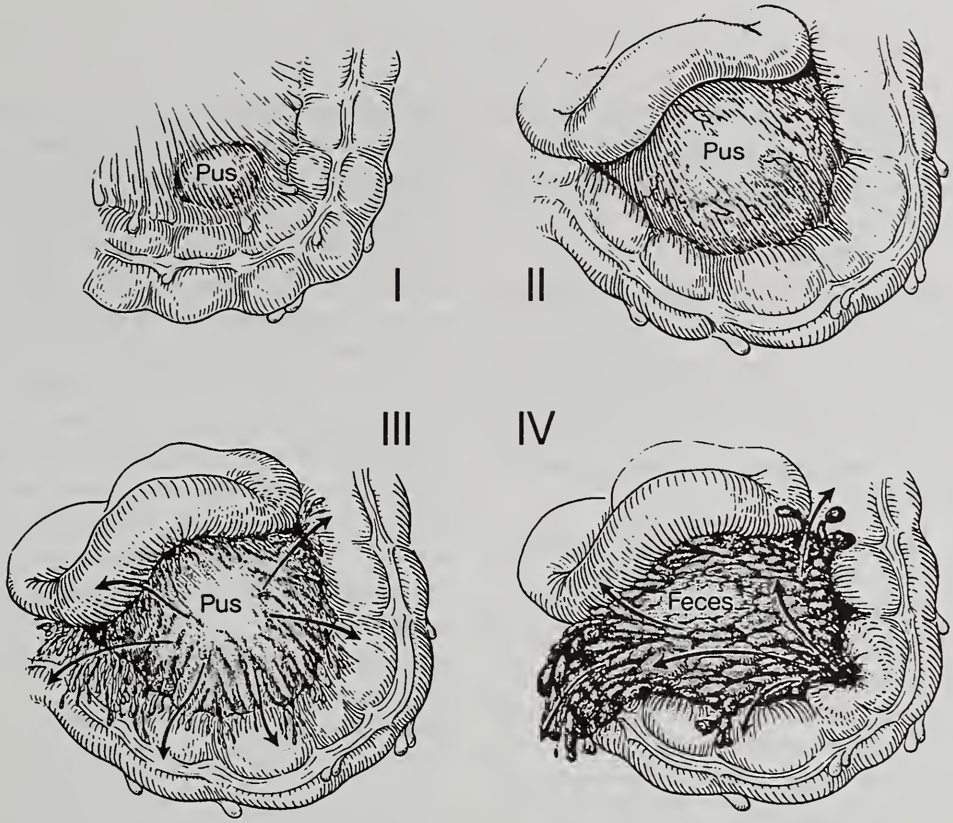

Figure 1
Classification of perforated diverticular disease (after Hinchey, et al.[29]) Stage 1, pericolic abscess; Stage II, walled-off abscess; Stage III, generalized purulent peritonitis; Stage IV, fecal peritonitis resulting from acute free perforation of diverticular disease.

with perforated diverticulitis complicated by fecal peritonitis: three patients underwent primary resection and immediate anastomosis and the others underwent the more conventional Hartmann procedure.

Patients and Methods

The patterns of presentation and treatment were reviewed for 297 patients with diverticulitis who were admitted during a five-year period (January 1983 to August 1988). One hundred and forty-six (146) of these patients (49.2%) required operative intervention for complications of diverticular disease of the large bowel; the remainder were treated medically.

Patient's age, sex, clinical presentation, physical and operative findings were recorded. The severity of disease was classified into four stages (I-IV) according to Hinchey (Figure 1).[29] Our population was distributed as follows: Stage I (n=84), Stage II (n=37), Stage III (n=15), and Stage IV (n=6).

Because we had previously reported the outcome of patients in the Hinchey I-III types perforated diverticular disease,[30] this discussion is limited to those patients who presented with perforated diverticular disease associated with fecal peritonitis (Stage IV disease). Of the six patients, three were treated with primary resection and immediate anastomosis while the remainder underwent Hartmann procedure. Patients' age, sex, associated disease, clinical presentation, method of resuscitation, length of hospitalization, morbidity, and mortality were recorded.

Resuscitative measures were instituted for all patients before surgery. These included the administration of supplemental oxygen and insertion of large-bore intravenous catheters. A balanced salt solution, eg, Ringer's Lactate, was given intravenously and titrated according to vital signs and urine output. Both urinary and gastric drainage catheters were inserted preoperatively for accurate monitoring of fluid output. Blood samples were obtained for routine diagnostic chemical analysis and for blood cross-match purposes.

The primary resection and anastomosis operation included the following technical points: i. The splenic flexure was mobilized in all patients; ii. The distal line of resection was through the rectum, the rectosigmoid junction being removed along with the specimen; iii. Dissection was continued distally until soft pliable bowel was reached; iv. The proximal line of resection was through soft nonindurated colon and carefully selected to exclude diverticula from the line of anastomosis; v. Good blood supply at the resection margins was confirmed by active arterial bleeding; and vi. All anastomoses were tension-free.

The technical aspects of the Hartmann procedure were similar to those described for the primary resection and anastomosis group with the exception of the formation of a terminal colostomy. In addition, mobilization of the splenic flexure was not required during the first stage resection. The rectal stump should be secured to the sacral promontory with a permanent suture to facilitate subsequent identification should reconstruction be carried out.[31]

All six patients underwent copious (5-10L) peritoneal lavage with warm saline at the completion of each procedure.

Results

The mean age for patients who underwent primary resection and anastomosis (n=3) and Hartmann procedure (n=3) was 63.7 and 78.7 years respectively with one man and two women in each group. No patient in either group had a history of recurrent attacks of diverticular disease before presentation as an emergency with bowel perforation and peritonitis.

On admission, the most frequent clinical findings and symptoms were abdominal pain, anorexia, history of fever, diarrhea, nausea, and vomiting. There was no apparent difference between the two groups for these features. Physical findings correlated with the presence of peritonitis and all six patients had abdominal rebound tenderness and hypoactive bowel sounds, but only three patients had abdominal distention. The most common radiological findings were ileus (3 patients) and pneumoperitoneum (3 patients).

Associated diseases in the primary resection and anastomosis group were arthritis, coronary artery disease, polycythemia vera, and schizophrenia, while additional diagnoses in the Hartmann procedure group were alcoholism, anemia, arrythymia, cirrhosis, and congestive heart failure. As previously outlined, both operative groups underwent standard measures of resuscitation before surgery.

All patients stayed an average of two days after surgery in the intensive care unit. In the primary resection and anastomosis group there was only one major postoperative complication—an abscess which was drained under computerized axial tomography control—and all patients in this group were restored to their preoperative state of health. By contrast, in the Hartmann group there were several complications: arrythmias, congestive cardiac failure, abdominal wall dehiscence, pneumonia, and one patient developed adult respiratory distress syndrome and expired on postoperative day two. This death lowered the average length of stay in the Hartmann group, which was 12.7 days (±4.8) compared to 18.7 ± 7.9 days for patients undergoing primary resection and anastomosis. The two patients who underwent the Hartmann procedure may require further hospitalization for the second stage anastomosis with its associated risks. To date, neither of these patients has undergone restoration of bowel continuity.

Discussion

The management of patients with acute diverticular disease continues to be a controversial clinical problem, but appears to be undergoing a process of change. We consider that the lack of an agreed system to classify these patients has inhibited this progress, and we suggest the use of the Hinchey method[29] despite the certain drawbacks which occur in any system of classification.

We have previously reported the patients of presentation and treatment of patients with Hinchey stages I, II, and III perforated diverticulitis.[30] However little has been written specifically devoted to Hinchey stage IV patients with acute diverticular disease complicated by fecal peritonitis. Although the current study considers a small population, it indicates that a low morbidity and mortality for patients with Stage IV perforated diverticulitis can be achieved after primary resection and anastomosis, at least for some patients. This observation concurs with our previous finding that patients with Stages I, II, and III perforated diverticular disease appear to fair better in terms of morbidity, mortality, and length of hospital stay, after a primary resection and anastomosis (with or without protective transverse colostomy) compared to former methods of treatment.[30] Fecal contamination treated by colostomy and drainage has historically yielded very high mortality rates, which range from 26%[25,32,33] to 40%.[25,34-36] As a result, the Hartmann procedure has been employed when the degree of peritoneal contamination is high and when bowel preparation is inadequate.[37-40] When preoperative bowel preparation is not possible (ie, in the presence of Stage IV diverticulitis), "on-table" bowel irrigation has been advocated.[41] However, none of the six patients in this report received preoperative bowel preparation or "on-table" irrigation.

We conclude that attention to preoperative resuscitation and postoperative monitoring plus surgical technique can limit the operative mortality and morbidity associated with the primary resection and anastomosis to an acceptable level. Our low morbidity and mortality in the surgical management of Stage IV diverticulitis using primary resection and anastomosis is consistent with others in which emergency resection for complicated colonic disease has been undertaken.[12,33,42-45]

However it should be noted that the mean ages of the patients in the immediate reconstruction group was 15 years less than those in the Hartmann operation group. Therefore, the relevance of these observations to the more elderly patient must be considered carefully.

If it is accepted that immediate bowel reconstruction is feasible for certain patients, we contend that the selection of these patients should be based on four factors: the relative absence of concomitant disease; a good response to preoperative resuscitation; the availability of a surgeon experienced in the treatment of complex colonic disease;[28] and attention to the details of postoperative management to maximize cardiopulmonary function to ensure adequate tissue perfusion.[46]

We conclude that there is a role for primary resection and anastomosis in the surgical management of patients with acute perforated diverticular disease associated with fecal peritonitis (Hinchey Stage IV). In the present study of a small patient population, primary resection and anastomosis was associated with low morbidity and mortality when compared to the more conventional Hartmann operation.

These data should be seen as clinical observations and not as prospectively collected information. Clearly, not all patients are candidates for primary anastomosis, and those who are malnourished, immunocompromised, hemodynamically unstable intraoperatively, or chronically steroid dependent should not be considered for immediate bowel reconstruction. We suggest that in selected patients, with minimal associated disease, primary resection and anastomosis offer the patient a viable alternative, which avoids the inconvenience of a colostomy and the associated risks of a second operation to restore bowel continuity.

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Choledochal Cyst Diagnosed in Pregnancy

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ABSTRACT—A primigravid patient with a type 1 choledochal cyst is reported. Conservative management allowed completion of the pregnancy and vaginal delivery of a term infant. Postpartum, the choledochal cyst was excised and biliary tree drained. A review of the literature and discussion of management alternatives of choledochal cysts discovered during pregnancy is presented.

Introduction

CHOLEDOCHAL cysts are cystic dilatations of the hepatobiliary system first described by Vater in 1723 and definitively diagnosed by Douglas in 1852.[1] Over 1,500 cases have been reported. Of these, only 22 have been described in pregnancy.[2-4] A 4:1 predominance of females to males exists, and 60-80% of choledochal cysts are discovered by the age of 10, making diagnosis in pregnancy potentially unlikely.[5] Detection of a choledochal cyst by physical examination during pregnancy is difficult because of the gravid uterus. The presence of the developing fetus limits radiologic investigation. Standard treatment in nongravid patients is cyst excision and biliary-enteric drainage. In pregnant patients, management may be associated with risk of maternal or fetal morbidity and mortality.

We report a patient diagnosed with choledochal cyst during pregnancy who successfully underwent vaginal delivery and postpartum cyst excision and biliary drainage. A review of the literature with therapeutic options is discussed.

Case Report

A 32-year-old primigravid woman at 15 weeks gestation presented with anorexia and upper abdominal pain of one week's duration. She had a history of intermittent right upper quadrant pain since adolescence. The pain worsened with eating and was relieved in the supine position. The patient was not jaundiced. There was right upper-quadrant tenderness with fullness, but no definite mass was palpated. The alkaline phosphatase and aspartate transaminase (ASAT, SGOT) levels were normal. The alanine transaminase (ALAT, SGPT) level was 75 U/L (normal 5-45 U/L). The serum bilirubin, lactate dehydrogenase, and pancreatic enzymes were normal. Abdominal ultrasonography revealed an 8 x 10 cm cystic mass in the porta hepatis inferior to the gallbladder and lateral to the pancreas. The intrahepatic and pancreatic ducts were not dilated. The patient was treated with hydration and bowel rest; there was spontaneous resolution of her abdominal discomfort. The ALAT decreased to 40 U/L. The patient was discharged after a five-day hospitalization, and followed up with serial ultrasonography, liver enzyme determination, and physical examination, and advised to report any symptoms. The remainder of her pregnancy was uncomplicated, and terminated with a vaginal delivery of a full-term infant.

At 10 months postpartum the patient felt adequately recuperated from childbirth, and further evaluation was undertaken. A repeated abdominal ultrasound was unchanged. Computed tomography demonstrated a large cystic mass in the right upper quadrant. Technetium-99m hepatobiliary scintigraphy confirmed a 10 cm type I choledochal cyst with mildly dilated intrahepatic ducts. Liver function studies remained unchanged. Endoscopic retrograde cholangiopancreatography (ERCP) demonstrated the presence of a large choledochal cyst without proximal hepatic duct filling. An anomalous pancreaticobiliary junction was noted with the common bile duct inserting into the pancreatic duct approximately 2 cm proximal to the ampulla.

The patient underwent choledochal cyst excision with hepaticoduodenostomy, cholecystectomy, and T-tube biliary drainage. *Citrobacter freundii* was cultured from the cyst contents. Pathologic examination revealed chronic cholecystitis and a 10 cm choledochal cyst. The

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Dr. Pyrtek died 19 October 1989 prior to completion of this paper. He made many contributions to the medical literature.

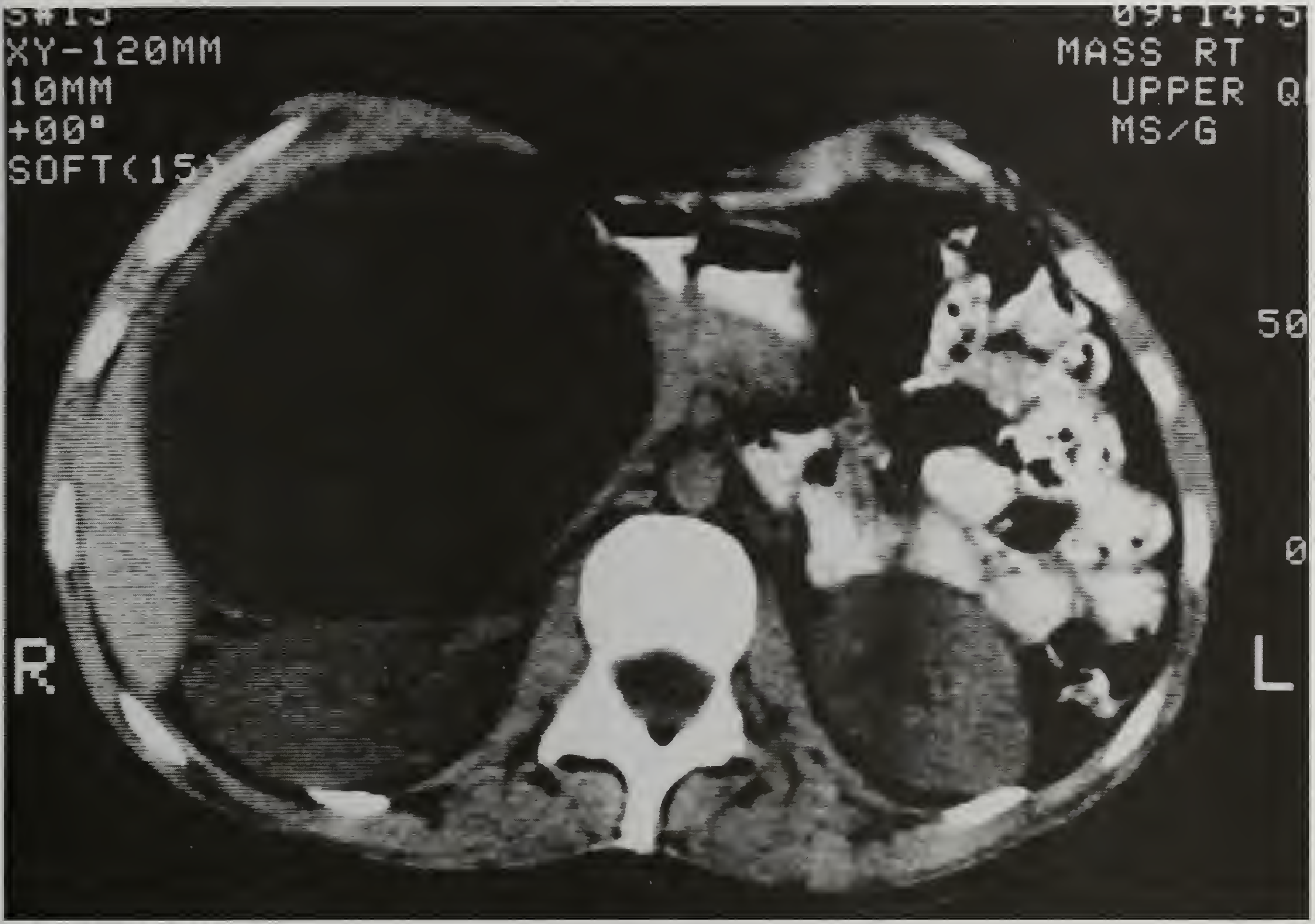

Figure 1
CT scan demonstrating a large cystic mass in the right upper quadrant

cyst showed low columnar epithelium with surrounding hemorrhage and fibrosis in the wall. The patient's postoperative course was uncomplicated, and she was discharged twelve days after surgery.

Discussion

Choledochal cysts are rare biliary tract anomalies most commonly seen in childhood. Two thirds of the cases have been reported in Asians. Choledochal cysts are characterized by cystic dilatation of the biliary tree varying in location from the ampulla of Vater to the intrahepatic bile ducts. Alonso-Lej et al[6] recognized three varieties of cysts: type I is a fusiform dilation of the common bile duct, type II a supraduodenal diverticulum of the common bile duct, and type III is a choledochocele involving the common bile and pancreatic duct orifices. Todani et al[7] classified type IVa as multiple extrahepatic cysts and type IVb as intrahepatic and extrahepatic cysts; type V is described as multiple intrahepatic cysts.

The etiology of choledochal cysts has not been established, but most believe they are congenital lesions. Yotuyanagi[8] proposed that the cysts developed because of unequal epithelial proliferation of biliary cells during the transition from a solid biliary cord to a duct, resulting in areas of ductular dilatation and narrowing. Sclerosing choledochitis has been postulated as a cause of multiple cystic dilatations.[9] Babbitt et al[10] suggested acquired inflammation of the distal common bile duct due to pancreatic reflux as the etiology. Many choledochal cysts are associated with anomalous junctions of the biliary and pancreatic ducts which may possibly lead to such reflux.[11]

Choledochal cysts may become symptomatic at any time from infancy to old age. While the majority of cysts are discovered within the first two decades, it is not uncommon for mild symptoms to persist for many years before the diagnosis is established. The classic triad of jaundice, abdominal pain, and palpable abdominal mass is present in 38-63% of patients.[5,12] In pregnant patients the gravid uterus may cause biliary outflow obstruction precipitating symptoms in a previously asymptomatic choledochal cyst. Nausea and vomiting from gastroduodenal compression by choledochal cysts and fever from cholangitis may be presenting symptoms. Pregnant patients with choledochal cysts, usually type I, present with larger cysts, presumably related to biliary obstruction from uterine compression. Patients have also presented in the first or second trimester when uterine size could not be the cause of biliary obstruction, suggesting a nonobstructive etiology. Aoki et al,[13] demonstrated gallbladder distention in gravid guinea pigs and proposed that extrahepatic biliary stasis with pancreatic reflux via an anomalous pancreatic ductal junction predisposes to cholangitis and biliary obstruction. Imamglu et al[14] reported delayed gallbladder emptying in immediate postpartum patients and attributed this phenomenom to elevated levels of estradiol and progesterone. Obstructive jaundice in pregnancy is most commonly due to intrahepatic cholestasis or cholelithiasis. Liver dysfunction and jaundice can also be presentations of hyperemesis gravidarum, eclampsia, acute fatty metamorphosis, and viral hepatitis in pregnancy.

The diagnosis of choledochal cysts is multimodal. Liver function tests assess the degree of obstructive jaundice. Serum alkaline phosphatase, normally increased in pregnancy, may not accurately reflect biliary obstruction. Abdominal ultrasonography is especially valuable in pregnant patients, where radiologic investigation is limited because of the developing fetus.[15] All other imaging techniques are also relatively contraindicated for the same reason. Postpartum computed tomography, hepatobiliary scintigraphy with Technetium-99m, and cholangiography can delineate the anatomic state of the biliary tract. The latter should be accompanied by pancreatography because of the high incidence of pancreatic ductal anomalies associated with choledochal cysts.[16,17]

The optimal management of choledochal cysts includes removal and biliary drainage. Untreated, choledochal cysts have a 97% mortality. [12,18] Death may result from biliary cirrhosis, cholangitis, hepatic abscess formation, pancreatitis, portal hypertension or spontaneous cyst rupture, and peritonitis. Carcinoma is reported to occur in 2.5-15% of choledochal cysts,[7] with a two-year survival of 5%.[19] This association mandates excisional therapy whenever possible.

Management of pregnant patients with choledochal cysts is not well established since most of literature refers to nongravid patients. Chesterman[20] reported 12 patients with the onset of symptoms antepartum or postpartum, including one patient who required drainage antepartum yet had an uneventful delivery. Aoki et al[13] suggested that cyst decompression with enteric anastomosis is necessary in symptomatic women who presented early in pregnancy, while cystenterostomy or cystectomy with caesarean section was advised for the full-term patient. Unfortunately, cyst decompression may not prevent future episodes of cholangitis. Accepted treatment of choledochal cysts is cholecystectomy, cyst excision, and Roux-en-Y hepaticoenterostomy.[8] However, cyst excision has generally been avoided in gravid patients because of the significant risk to the mother and fetus. Others have described obstructive jaundice requiring antepartum drainage,[2,12] spontaneous rupture necessitating drainage,[25] and

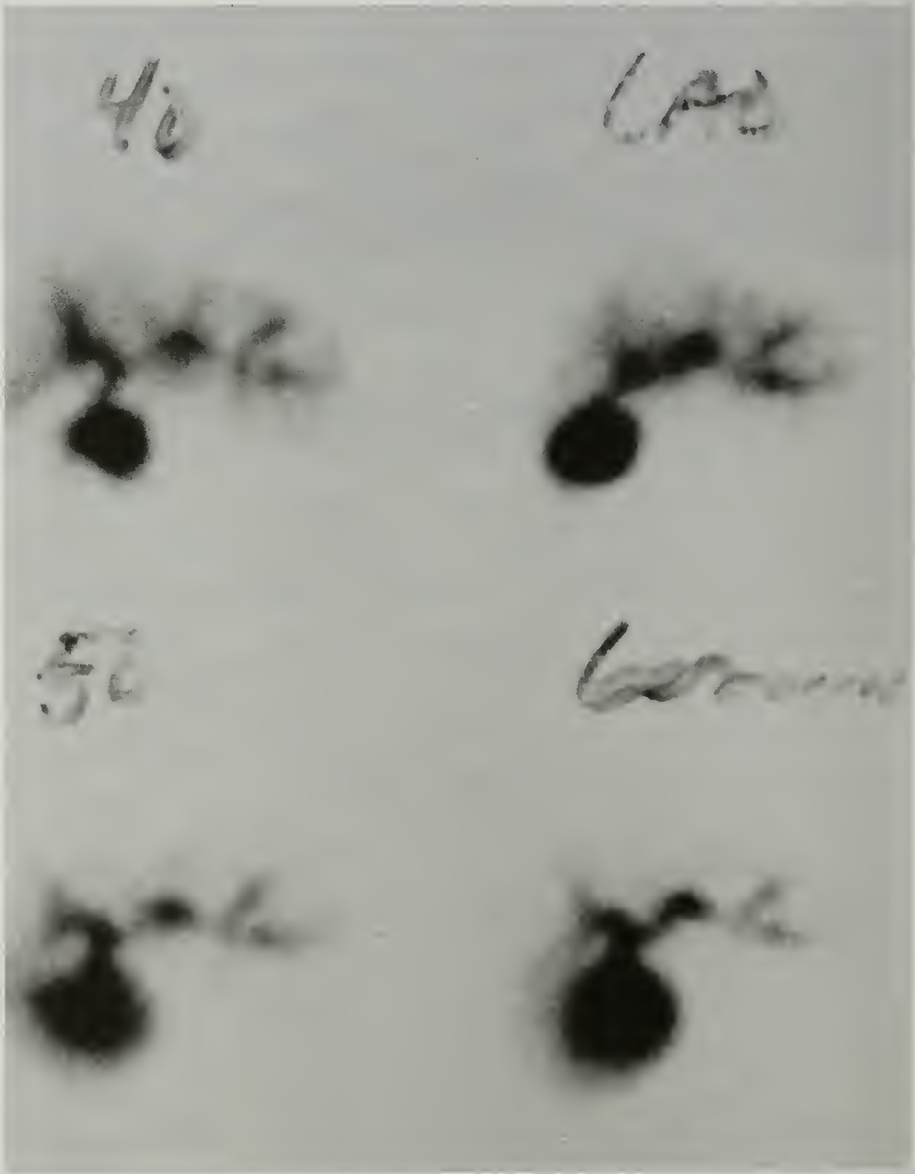

Figure 2
Technetium-99m hepatobiliary scintigraphy shows a Type 1 choledochal cyst with mildly dilated intrahepatic ducts

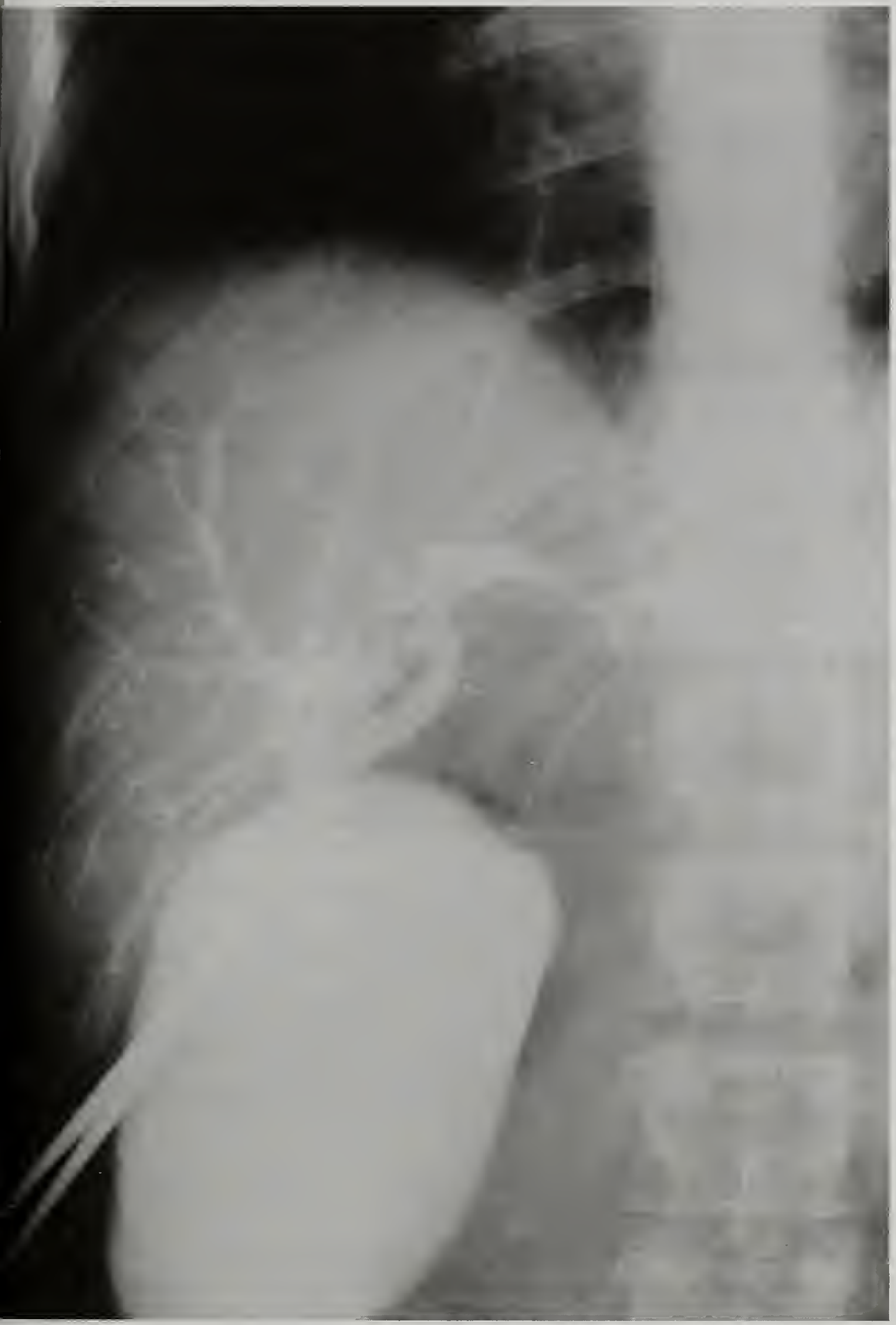

Figure 3
Intraoperative cholangiogram confirming the Type 1 choledochal cyst with proximal hepatic duct filling

bile peritonitis recognized at the time of caesarean section treated with biliary decompression.[5] Urgent surgical management in the immediate postpartum period has also been reported.[26]

Choledochal cysts diagnosed in asymptomatic gravid patients can be managed conservatively. Intermittent episodes of abdominal pain with mild abnormalities of liver function, presumably related to partial biliary obstruction or stasis, are not uncommon, but may resolve spontaneously. Ascending cholangitis refractory to antibiotic therapy does require surgical decompression. Complete biliary obstruction, cyst expansion, or rupture demand rapid intervention with cyst decompression. Excision of choledochal cysts previously treated by enteric drainage alone can be performed safely later to avoid recurrent cholangitis or biliary carcinoma.[27] While one case of adenocarcinoma in a choledochal cyst during pregnancy has been reported,[3] cyst excision during pregnancy is not indicated for the risk of malignant degeneration, and should be delayed until the postpartum period.

Caesarean section has been recommended to avoid rupture during labor.[3] However, an uncomplicated pregnancy with an asymptomatic choledochal cyst need not require caesarean section. Only one case of perforated choledochal cyst during labor has been reported.[28] Complications of choledochal cysts may require emergency biliary-enteric drainage in combination with caesarean section, depending on fetal viability. Close observation and monitoring of the mother and fetus during labor should dictate the mode of delivery. We feel a choledochal cyst is not a contraindication to vaginal delivery, and definitive treatment should be delayed until the postpartum period.

Summary

Choledochal cysts presenting during pregnancy are rare hepatobiliary anomalies which place the mother and fetus at significant risk. We report a primigravid patient with a choledochal cyst treated conservatively. Her labor and delivery, and postpartum surgical intervention were uncomplicated. We believe operative correction of choledochal cysts can be delayed in asymptomatc or minimally symptomatic gravid patients. With careful monitoring, vaginal delivery can be performed safely in selected patients avoiding the necessity of performing caesarean sections in all gravid patients with choledochal cysts. After delivery, the choledochal cyst should be excised with drainage of the biliary tract.

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Abstracts: Fifth Annual Research Day

DANBURY HOSPITAL

Introduction

The Fifth Annual Danbury Hospital Research Day was held on 9 May 1990. A total of 51 abstracts were submitted, authored or coauthored by 114 individuals. Of note, 19 of these are physicians in private practice, 12 are residents, seven are nurses, and 20 are technical associates.

Charlene Reed-Miller, Ph.D., Director, Office of Research and Sponsored Programs, Danbury Hospital; Chairman, Research Day Committee.

Thrombolysis in Unstable Angina: Will the Beneficial Effects of Thromobolytic Therapy in Myocardial Infarction Apply to Patients with Unstable Angina?

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MARION MORRISON, M.D., COLIN REISNER, M.B.B.C.H., ALBERTO RICART, M.D.,
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Department of Medicine, Danbury Hospital, and Yale-New Haven Hospital

Thrombolytic therapy has gained an established role in the acute management of myocardial infarction. There is a natural interest in the extension of thrombolytic therapy to patients with unstable angina (UA). Potential benefits include: 1) decreased mortality, 2) decreased incidence of acute myocardial infarction (MI), 3) decreased recurrence and severity of ischemic episodes, 4) decrease in need for revascularization procedures, and 5) improvement in outcome and safety in angioplasty.

Danbury Hospital has been a collaborator with the Yale University School of Medicine in two multicenter clinical research trials designed to evaluate the role of TPA in UA. Entry criteria specify rest chest pain accompanied by EKG changes or well-documented prior coronary artery disease (CAD). Pain duration was between five minutes and six hours. A total of 10 patients, seven male and three female, ages 59-76, have been enrolled. There have been no deaths or major complications. One minor in-hospital complication was seen. At six-week follow-up, all patients were doing well.

The TIMI IIIB trial is part of an ongoing double-blinded study of the comprehensive management of UA and non-Q wave MI. The roles of thrombolytic therapy, early catheterization, and invasive therapy are being evaluated. Patients are randomized to TPA or placebo and subsequently to either an invasive (early catheterization) arm or conservative arm (catheterization if initial therapy fails). Eligibility is again determined by rest chest pain associated with specific EKG criteria or documented CAD. Patients are eligible up to 12 hours after the onset of pain. A total of 13 patients, 11 male and two female, ages 48-75, have been enrolled. Seven patients were randomized to the conservative arm, six to the invasive arm. Of the conservatively-treated patients, three required early catheterization and subsequent revascularization surgery. There have been no deaths or major complications.

In summary, initial data from this study show that the use of TPA in UA appears to be safe. Additional data will be required to delineate its true role. These studies are ongoing with an expected completion in one or two years.

All authors are at Danbury Hospital in addition to other institutional and departmental affiliations indicated.

Associate Clinical Professor of Medicine (Dr. Copen, Dr. Alexander), Yale University School of Medicine.

Right Ventricular Myocardial Infarction Complicated by Right-to-Left Shunt and Paradoxical Embolism: Report of Five Cases

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Department of Medicine

Isolated right ventricular myocardial infarction (RVMI) is rarely encountered in clinical practice. However, it may be an associated complication of inferior or posterior wall myocardial infarction (MI) in up to one third of patients. A probe-patent foramen ovale (PFO) has been found in 27% of autopsies. Thus, in patients with hemodynamically significant RVMI, elevated right ventricular, and right atrial (RA) pressures may develop, resulting in a potential for right to left shunting (RTLS) across a PFO.

To date, only four cases of RTLS across a PFO complicating RVMI have been reported in the world's literature. Over the past seven years, we have identified five cases of this interesting clinical and pathologic complication.

All five patients presented with profound hypotension, marked jugular venous distention and clear lung fields on physical examination, and by chest film. All five had severe, persistent hypoxemia despite oxygen administration. Further evaluation with right ventricular catheterization and echocardiography confirmed the presence of RVMI and PFO. Of the five patients treated, three had a well-documented paradoxical cerebral embolus across the PFO, two of which were fatal. The three survivors are alive and well.

Patients presenting with hypoxemia complicating acute RVMI should be suspected of having RTLS across a PFO. This complication requires important therapeutic decisions. In addition, the risk of paradoxical embolism is significant and may warrant early institution of anticoagulation therapy.

Associate Clinical Professor (Dr. Copen, Dr. Alexander), Yale University School of Medicine.

A Controlled Clinical Trial of Murin Monoclonal IgM Antibody to Endotoxin in the Treatment of Gram-Negative Sepsis

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AND THOMAS GRAZIANO, M.D.
Department of Medicine

To determine whether a murine monoclonal IgM antibody (E5 antibody) directed against Gram-negative endotoxin is effective in the treatment of Gram-negative sepsis, we conducted a multicenter double-blind, placebo-controlled trial. Four hundred and sixty-eight patients with suspected Gram-negative sepsis were evaluated for efficacy. Of these, 316 had confirmed Gram-negative sepsis (defined as an infection with a culture from any source growing Gram-negative organisms plus a systemic response characterized by typical changes in vital signs or evidence of end-organ dysfunction or hypoperfusion), 171 of whom were bacteremic.

Analysis of all patients with Gram-negative sepsis, not in shock at study entry, (n=137) demonstrated a 46% reduction in mortality from 15 of 65 (23%) in those treated with placebo to 9 of 72 (12%) in those receiving antibody (*P*=0.03 by covariate analysis). Similar trends were observed in both bacteremic and nonbacteremic patients. In these 137 patients, resolution of the major morbidities of sepsis (disseminated intravascular coagulation, adult respiratory distress syndrome, and acute renal failure) was significantly greater in E5-treated patients (54% resolution vs 26% resolution, [*P*=0.04]).

There was no improvement in survival between the antibody and placebo treated groups when all patients (shock plus nonshock) with either confirmed Gram-negative sepsis or bacteremia were considered.

Treatment with antibody was associated with four rapidly reversed allergic reactions among the 247 patients (1.6%) receiving any intravenous antibody. No pattern of clinical or laboratory abnormalities was identified for antibody treated patients. An asymptomatic IgG antimurine antibody response was noted in 47% of E5-treated patients, of whom 92% had low titers.

We conclude that treatment with murine monoclonal antibody is effective in reducing mortality and morbidity in patients with Gram-negative sepsis who are not in shock at the time of administration.

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The Group A Streptococcal Carrier State: A Reexamination

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State Department of Health

Streptococcal infection usually is defined as a positive throat culture with a seriologic response to group A ß-hemolytic streptococci, and a patient with a positive throat culture and no serologic response is a streptococcal carrier. Studies suggest that streptococcal carriers should show little clinical response to antibiotic therapy when compared with patients with true streptococcal infections. Patients with acute pharyngitis were divided into three groups: group 1, 38 patients with negative throat cultures; group 2, 72 patients with a postive throat culture and a significant rise in streptococcal antibody titers; and group 3, 77 patients with positive throat cultures and no significant rise in streptococcal antibody titers. Patients in group 2 and group 3 had a comparable and dramatic clinical response to antibiotic therapy that was considerably greater than the clinical response in the patients in group 1. These findings raise questions about the appropriateness of using streptococcal antibody responses to distinguish between the streptococcal carrier state and a true streptococcal infection.

Clinical Professor (Dr. Randolph), Associate Professor (Dr. Gerber), Department of Pediatrics, University of Connecticut School of Medicine.

Evaluation of a New Latex Agglutionation for Detection of Streptolysin O Antibodies

MARTIN F. RANDOLPH, M.D., AND MICHAEL A. GERBER, M.D.
Department of Pediatrics

Acute- and convalescent-phase serum specimens were collected from 50 patients with group A streptococcal pharyngitis. The antistreptolysin O (ASO) titer for each serum specimen was determined by using both the standard neutralization assay and the latex agglutionation (LA) test (Rheumagen ASO; Biokit Inc., New Britian, Conn.). When the the ASO titers derived by the two methods were compared, the correlation coefficient was 0.93. When the ability of the LA test to demonstrate a significant ASO titer rise (> 2 dilutions) was compared with that of the standard neutralization assay, the LA test had a sensitivity of 91%, a specificity of 86%, a positive predictive value of 83%, and a negative predictive value of 92%. Triplicate LA test determinations were performed on a subset of 31 serum specimens, and for 29 (94%), the repeated ASO titers were all within one dilution of each other; the width of the titers were all within one dilution of each other; the width of the 95% confidence interval for the triplicate measurements of each serum specimen was + 32.8 IU. We found the Rheumagen ASO to be a simple, rapid LA procedure for measuring ASO titers that produces results that are highly reproducible, show little lot-to-lot variability, and are comparable to the ASO titers obtained with the standard neutralization assay.

Clinical Professor (Dr. Randolph), Associate Professor (Dr. Gerber), Department of Pediatrics, University of Connecticut School of Medicine.

Failure of Once-Daily Penicillin V Therapy for Streptococcal Pharyngitis

MARTIN F. RANDOLPH, M.D., AND MICHAEL A. GERBER, M.D.

To determine if a single daily dose of penicillin V would be effective in the treatment of group A ß-hemolytic streptococcal (GABHS) pharyngitis, 154 patients with GABHS pharyngitis were randomly assigned to receive 750 mg of penicillin V once daily for 10 days or 250 mg of penicillin V three times daily for 10 days. The two regimens were comparable in their ability to eradicated GABHS from the upper respiratory tract in 18 to 24 hours and in their effect on the clinical course of the disease. However, bacteriologic treatment failure occurred in six (8%) of the 76 patients in the three-times-daily group and in 16 (22%) of the 74 patients in the once-daily group. These findings support the current recommendation that penicillin V be given in two or more divided doses for a full 10 days for the treatment of GABHS pharyngitis.

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Intravenous Fleroxacin in the Therapy of Serious Infection

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STEVEN ROBERTS, M.D., D. MALADORNO, P. CASEY, B. TELLONE, D. PIZZUTI,
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Under a multicenter phase II protocol, 74 evaluable patients were treated with intravenous fleroxacin 400 mg once-daily. Infections treated were complicated urinary tract infection (UTI): 41; skin and soft tissue infection (SKST): 24; and pneumonia/pneumonitis: 9. Patients with UTI had complicated pyelonephritis (21), uncomplicated pyelonephritis (8), complicated cystitis (7), and recurrent UTI (5). Patients with SKST had cellulitis (12), skin ulcer (4), skin abscess (4), and wound infection (4). Thirty-eight of 41 patients (93%) with UTI were bacteriologically cured and 40 (97%) clinically cured. Eight of 24 patients (33%) with SKST were cured bacteriologically and 14 of 24 (58%) had clinical cure or improvement. Eight of 16 failures are from one center where no bacteriologic cures were achieved, possibly representing a bias in the population entered. Five of nine (55%) pneumonias were cured bacteriologically and seven (78%) clinically. Within the UTI group the organisms (eradicated/treated) were *E. coli* (19/21), *K. pneumoniae* (7/7), *P. aerugenosa* (3/3), *E. cloacae* (2/2), enterococcus (2/2), *S. agalactiae* (1/1), and other enterobacteriaceae (6/7). Within the SKST group 4/14 (28%) isolates of *S. aureus* and 13/16 (81%) of enterobacteriaceae were bacteriologically eradicated. In three *S. aureus* isolates failure appeared to be associated with development of resistance during therapy. Within the pneumonia group bacteriological eradication was seen in 3/3 *H. influenzae*, but in only 1/3 *Pseudomonas* spp, 1/2 *S. aureus*, and 0.1 *K. pneumoniae*. Of these isolates one *S. aureus*, one *P. aerugenosa*, and one *K. pneumoniae* appeared to develop resistance during therapy in association with the presence of foreign material (ET tube, trach). Adverse events (AE) remotely, possibly, or probably related to fleroxacin occurred 92 times in 46 of 159 treated patients (29%). Ninety-two percent were of mild to moderate severity and only six AE prompted discontinuation of the medication. The most common AE involved the digestive system, 43 patients (27%), and consisted mostly of nausea or vomiting. Central nervous system AE's occurred in 15 patients (9%) and were predominantly headache and insomnia. Only 3% of patients had an AE at the injection site. Fleroxacin appears to be safe and effective in the therapy of serious infections. Bacteriologic and clinical failure were seen more frequently in infections due to *S. aureus* and appeared to be associated with resistance development during therapy. Further investigation of a more homogeneous population needs to be performed.

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Computer Use in the Diagnosis of Viral Hepatitis: A Diagnostic and Teaching Tool

CARLOS RICART, M.D. AND NILO E. HERRERA, M.D.
Department of Laboratory Medicine

The diagnosis of viral hepatitis has been a challenge in medicine. The long incubation period, the presence of asymptomatic carriers, and the existence of multiple etiologic agents (viruses) add to the difficulties.

The discoveries of the role of the delta virus in the development of chronic hepatitis B virus infection, the discovery of an E virus, and more recently the demonstration of hepatitis C virus as the etiologic agent of non-A non-B hepatitis and the expected development of new specific immunologic tests which will become available in the near future, does not make the task easier. As our knowledge of these various reactivity patterns evolves, it is increasingly difficult to employ these tests in an orderly fashion and to interpret results especially for those not using them on a daily basis.

To provide physicians and other health personnel a reliable and easily undatable diagnostic and teaching tool, a comprehensive computer program has been developed for clinical use in the study of patients suspected of suffering from acute or chronic hepatitis and related epidemiologic considerations. The software displays multiple menus guiding the user in a logical fashion through the steps required to elucidate various clinical and epidemiologic options and suggests tests to establish appropriate diagnoses, patterns of reactivity that may be encountered in a given condition, and provides other helpful information in the form of test displays. Once the clinical problem is properly defined, the user is invited to enter pertinent laboratory data, which the software, using a binary search algorithm, employs to select the differential and most likely diagnosis on the basis of the positive tests.

This program will be helpful to clinicians, laboratory personnel, and students in the ordering and interpretation of results of tests in the differential diagnosis of viral hepatitis.

Patient data can be saved to document additional reactivity patterns in these conditions. A listing of current bibliographic references, readily updated as demanded by scientific developments, can be printed on demand.

Associate Clinical Professor of Pathology (Dr. Herrera), Yale University School of Medicine.

Secondary Primary Malignancy Following Breast Malignancy: A Retrospective Analysis of Danbury Hospital Data

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The association with breast cancers of metachronous and synchronous secondary primary malignancies of other sites including contralateral breast has long been recognized in the medical literature. We analyzed retrospectively 83 medical records of patients registered at the Danbury Hospital Tumor Registry with known metachronous/synchronous secondary primary malignancies following primary breast carcinoma, excluding common skin malignancies. We examined location and stage of first and second primaries, interval between malignancies, age at first diagnosis, treatment of the primary malignancy, and menopausal and family history. The second primary malignancy most commonly occurred in contralateral breast (49.4%), followed by colon/rectum (13.3%), cervix (7.2%), and endometrium (6.0%), with various other locations accounting for 24.1%. Intervals between first and second primaries varied greatly within all groups but averaged about 50 months. No correlation was found between the stage of the first primary and the stage of the second primary. Additionally, modality of treatment of first primary was not related to the interval to second primary. In the postmenopausal group, roughly one-third of all second primaries were colon/rectum malignancies. Our analysis would suggest that close surveillance of the gastrointestinal tract is indicated following primary breast carcinoma, especially in the postmenopausal population.

Use of Erythropoietin in Selected Anemic Patients with Nondialysis Dependent Renal Disease

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Department of Laboratory Medicine

Erythropoietin, a natural hormone of kidney origin which stimulates red blood cell marrow precursors, is now available for clinical use in patients with renal disease and selected hematologic problems. Together with Ortho Pharmaceuticals, who provided recombinant human erythropoietin (rh-Epo) and the experimental protocol, we studied the response of hemoglobin and hematocrit in anemic nondialysis renal patients and selected patients with various transfusion dependent hypoplastic or myelodysplastic anemias.

All patients' hemoglobins were less than 8g/dL, hematocrits less than 24%, and rh-EPO less than 500 mU/mL at beginning of the study. Thrice weekly IV rh-EPO injections started at 50 U/Kg for renal patients and 150 U/Kg for hematologic cases. The rh-EPO increments were 25-50 U/Kg/month to a maximum of 300 U/Kg or hematocrit of 35%, whichever came first. All six renal patients who complied with the protocol had good responses. There was no response to rh-EPO in four transfusion dependent patients with primary hematologic disease.

Associate Clinical Professor (Dr. Kranwinkel), Assistant Clinical Professor (Dr. Gelfman), Department of Pathology, Yale University School of Medicine.

The Role of Endoscopy in Gastric Volvulus

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Department of Medicine

Gastric volvulus, an uncommon condition, may be defined as a rotation of the stomach exceeding 180, or of sufficient magnitude to create a partial or complete closed loop obstruction. Three main anatomic variants exist, namely, organoaxial volvulus, mesenteroaxial volvulus, and, rarely, a combination of the two. Gastric volvulus may be acute or chronic in onset, the former being a surgical emergency.

We report a case of an 80-year-old male with a known large hiatal hernia who presented with a two-day history of dull epigastric pain which progressively intensified. He had associated dysphagia to both solids and liquids and was unable to swallow his own secretions. Physical examination revealed postural hypotension and a gastric succession splash. Repeated attempts to pass a nasogastric tube were unsuccessful.

A chest x-ray film revealed a large diaphragmatic hernia containing most of the stomach with an air-fluid level in the retrocardiac portion of the chest and a second air-fluid level in the epigastrium. Our suspicion of gastric volvulus was confirmed.

The patient underwent endoscopic reduction of the volvulus because he was considered to be a poor surgical risk. He made an uneventful recovery and was discharged four days later. In follow-up, he is currently asymptomatic.

To our knowledge, this is the third report in the world literature of endoscopic reduction of an acute gastric volvulus.

Diagnosis of Cholecystitus and Cholelithiasis by Cholescintigraph and Ultrasonography with Histopathological Correlation

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STEVE C. SIEBER, M.D., AND NILO E. HERRERA, M.D.
Department of Laboratory Medicine

Cholecystitis and cholelithiasis are two of the most common health problems encountered in clinical practice. In the United States, 15 million females and five million males will have gallstones at any given time. Early diagnosis and cholecystectomy have been shown to decrease the morbidity and mortality rate; hence, accurate and rapid diagnostic methods are important.

We reviewed 163 cholecystectomy patients, (ages 19-88), during 1989 and correlated the pathological findings with radionuclide cholescintigraphy and ultrasonography.

Seventy-two (44.2%) of the patients had cholescintigraphy, of whom 50 (69.4%) had positive scans for cholecystitis; of these 30 (41.7%) had acute cholecystitis, and 20/50 (27.8%) had chronic cholecystitis. In acute cholecystitis, true positive (TP) was 87.0% compared to reported values of 94.8%, 98.0%, and 95.2%; the sensitivity was 95.2% as compared to reported values of 100%, 90.0%, 95.8%, and 94.8%. In chronic cholecystitis, TP was 61.2%, compared to reported values of 43.0%, 55.0%, 64.0%, and 50.0%; the sensitivity was 63.8%.

One hundred one of the 163 patients (62.0%) had sonography, 90 of whom (88.1%) showed cholelithiasis, (sensitivity was 95.7%, specificity equals 85.7% and accuracy equals 85.0%); 89 (98.9%) of the 90 cholelithiasis patients were found to have cholecystitis, and one (1.1%) was found to have adenocarcinoma. Twenty-three of the 101 patients (22.8%) had an ultrasonographic diagnosis of cholecystitis, (sensitivity equals 30.3%, accuracy equals 22.8%); and 24 (23.8%) had an equivocal ultrasonographic diagnosis.

In conclusion, radionuclide cholescintigraphy is highly sensitive for early and rapid diagnosis of cholecystitis, whereas ultrasonography was found superior in diagnosing cholelithiasis.

Associate Clinical Professor (Dr. Gupta), Clinical Professor (Dr.Herrera), Department of Nuclear Medicine, University of Connecticut School of Medicine, Clinical Professor (Dr. Braza), Department of Pathology, New York Medical College.

Role of Aggressive Therapy for Osteoporosis: A Preliminary Report

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Osteoporosis is the reduction of normally mineralized osteoid which leads to significant morbidity and mortality among the elderly. In the past it was considered that bone loss in the elderly was an irreversible phenomenon; however, recent reports indicate that it may be possible to arrest bone loss with appropriate treatment as documented by single and dual photon absorptiometry (DPA) techniques for quantitative assessment of bone mineral content.

Twenty-two patients, age 28-73 years, were included in the study. All were females with average age of 53. Six have had total hysterectomy, 12 were postmenopausal, and four were premenopausal. Nine had a history of multiple fractures secondary to osteoporosis while the other 13 had high index of suspicion for osteoporosis, later confirmed by DPA. Different treatment regimens were used with 18 patients receiving estrogens (three oral estrogen, 10 estrogen patch, and five both dermal and oral estrogen). Ten patients were given calcitonin, 50 units 3/week, S.C.; 18 received sodium fluoride, 50 mg/day; 20 received vitamin D, and all 22 received calcium supplements up to 1,500 mg/day. Patients had been followed for 12-48 months (average 24). Bone mass of the lumbar spine improved in 19 patients while in two there was no change and in one there was decrease of 4% over the period of four years. Overall there was 8% improvement of bone mass in the group; five patients receiving all agents showed improvement of 7.8%; patients who received calcitonin improved by 7.2%, whereas non-high-risk patients on estrogen improved by 9%.

Though the number of patients in the study and the follow-up period is limited, the trend confirms the concept that aggressive therapy for osteoporosis produces measurable increase in the bone mass, and of the current agents employed, estrogen replacement appears most effective. Further work continues for long-term longitudinal studies.

Associate Clinical Professor Nuclear Medicine (Dr. Gupta), University of Connecticut School of Medicine.

Radioiodine Treatment for Hyperthyroidism: Danbury Hospital Experience

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Radioiodine remains the treatment of choice for most patients suffering from hyperthyroidism. Several strategies have been employed in the past to reduce the incidence of posttreatment hypothyroidism and on the other hand to reduce the need for multiple dosage. We reviewed our experience with such patients during the past two years to assess the effectiveness of therapy being employed in our institution.

Records of 93 patients were analyzed. There were 21 males and 72 females ranging in age from 21-70 years. There were 74 patients with diffuse toxic hyperthyroidism (Graves' disease); nine with toxic multinodular (TMN) gland, and 10 had autonomous toxic nodule (TA). Patients with toxic nodule received an average 13.76 mCi^{131}I; multinodular goiter patients were given an average 14.5 mCi, and Graves' disease 7.8 mCi radioiodine. Fourteen of the 74 patients (18.9%) with Graves' disease required a second therapeutic dose whereas three of the nine TMN and two of the 10 with TA required a second therapeutic dose. Initial thyroid radioactive iodine uptake tended to be higher in patients requiring additional dosage suggesting possible rapid iodine turnover. Sixteen patients (12 Graves', three TMN, one TA) were followed for about one year. Three with Graves' (24%) and one TA became hypothyroid whereas one TMN was still toxic. The remaining were euthyroid. No adverse effects to radioiodine therapy were observed in this series of patients.

The incidence of hypothyroidism during the first year after therapy of Graves' disease and the rate of multiple therapy needed was found to be similar to many reported studies; however, reduction in the rate of multiple therapy would be desirable and should be aimed for. In conclusion, radioiodine provides a simple and safe mode of treating patients with hyperthyroidism of varied types. The experience of the Danbury Hospital is in line with others, though subtle adjustments in the procedure would need to be emphasized.

Associate Clinical Professor of Nuclear Medicine (Dr. Gupta), University of Connecticut School of Medicine, Clinical Professor of Medicine (Dr. Belsky), Yale University School of Medicine.

Quantitative Cholescintigraphy for the Diagnosis of Acalculous Biliary Disease - An Update

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Acalculous biliary disease remains one of the most frustrating clinical problems in spite of advances made in gallbladder imaging. Search therefore continues for a sensitive and noninvasive procedure for the evaluation of patients suspected of gallbladder disease, but who have normal conventional tests such as ultrasound, gastrointestinal series, cholecystograms, endoscopy, and routine HIDA scans. Quantitative cholescintigraphy using sincalide (C-terminal octapeptide of cholecystokinin-CCK) has been evaluated in our department since 1986 and this report updates our experience in the first 62 patients studied during the first 28 months. There were 45 females and 17 males with age range of 17-72 years (average 41).

Gallbladder ejection fraction (GBEF) was measured after intravenous administration of CCK (0.02ug/kg) during cholescintigraphy. In 29/62 patients GBEF was reduced (normal more than 35%). Sixteen of 29 patients with reduced GBEF underwent cholecystectomy. Histopathologically 15 of the 16 patients had evidence of chronic cholecystitis and one had acute and chronic cholecystitis. In 14 patients, symptoms resolved completely whereas one had only slight improvement and one was lost to follow-up. In 13 medically managed patients, symptoms persisted in 10, two improved and one was lost to follow-up. In 33 patients with GBEF over 35%, three with strong clinical suspicion of gallbladder disease had cholecystectomy; one had acute and chronic cholecystitis, one mild chronic cholecystitis, and one had cholesterosis. All three improved symptomatically following surgery. The sensitivity of the test was 84%, specificity 100%, and accuracy 94%.

In conclusion, quantitative cholescintigraphy is a highly specific test for patients with suspected acalculous gallbladder disease. Patients with decreased GBEF and symptom reproduction following cholecystokinin can be identified as a subgroup in whom cholecystectomy may be recommended with good results.

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Review of Intraoperative Consultations

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Department of Laboratory Medicine

In order to assess the accuracy of the intraoperative consultation (frozen section) at Danbury Hospital, all such consultations performed during 1988 (836 cases) were retrospectively reviewed. The pathologic diagnoses rendered at the time of surgery, as documented in the frozen section report, were compared to the final diagnoses documented in the pathology report.

Of the 836 cases, 753 (91.2%) had a conclusive frozen section diagnosis which was identical to the final diagnosis. All intraoperative consultation slides, permanent slides, and reports from the remaining 83 (8.8%) cases were reviewed by a committee consisting of four attending pathologists and six pathology residents.

In 56 of the remaining 83 cases (7.7% of total), the diagnosis had been deferred at the time of frozen section. Fourteen of these deferred cases were lymphoreticular malignancies, in which the diagnosis is routinely deferred as a standard practice. The other 42 deferred cases were different or unusual cases requiring multiple sections, special stains, or optimal histology. In the remaining 17 cases (2.0% of total), there was a discrepancy between the frozen section and final diagnosis. Reasons for discrepancies included seven cases with interpretation error, five cases of sampling error, and five cases of microscopic size lesions. Of the 17 errors, none resulted in a serious effect on patient care.

The accuracy and deferral rate of intraoperative consultations at Danbury Hospital in 1988 is comparable to similar published studies.

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Prognosis of an Admission with Right Upper Quadrant Abdominal Pain

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General surgeons do most of the operations at Danbury Hospital and cholecystectomy is their most common operation. To answer important quality-of-care questions, a retrospective chart study was done on 238 consecutive patients with recent cholecystectomies by 11 surgeons. Over 70 pieces of information per patient were stored and reported using a DATAEASE (TM) (Software Solutions, Inc.) data management system.

Who lived and who died? Only one patient died giving a highly acceptable mortality rate of 0.4%. Twenty-eight complications occurred in 24 patients for an equally acceptable morbidity rate of 12%.

Are prophylactic antibiotics used appropriately and efficiently? Half of the patients received prophylactic antibiotics at an estimated cost of $12,000, most commonly mezlocillin and cefoxitin. Four of the five patients with wound infections were treated with prophylactic antibiotics. Cultures indicate cefazolin might have been more effective at less than 20% of the cost.

Is routine operative cholangiography justified? Cholangiograms were done in 204 patients at an estimated cost of $35,000. All patients with proven common duct stones had an indication other than cholangiography except two. Three needless explorations were done because of cholangiography and one led to a serious complication. Selective but not routine cholangiography is supported.

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Intraoperative Neurosonography in the Resection of Intracerebral Masses

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The translocation of ultrasonography from the radiology department to the operating room has broadened our ability to localize small lesions in areas of eloquent cortex. Combining the preoperative magnetic resonance imaging (MRI) delineation of such lesions and intraoperative neurosurgery appears to offer increased surgical versatility and improved patient outcome.

We have recently treated three patients with lesions located in critical cortical areas — motor cortex, sensory cortex, and visual cortex. All patients underwent preoperative MRI followed by operative resection of the lesion utilizing intraoperative neurosonography. MRI was performed with a GE Signa 1.5 Tesla imager. Images were obtained in saggital T1 (signifies MRI sequence utilizing a short echo and return echo time), axial T2 (MRI sequence with long echo and return echo time), with variable TE (echo time), and axial and coronal T1 sequences with gadolinium enhancement. These images provide multiplanar views and allow accurate craniotomy flap placement. The Midas Rex was used to perform the craniotomy. Once the dura was exposed a Diasonics DRF (model designation) - 1 with a 6 MHz transducer measuring 2 x 3 cm was used to image transdurally the lesion in the saggital and coronal planes. Once lesion location was verified, a small corticectomy was performed. Excision of the mass was then accomplished with minimal cortical resection and manipulation.

Postoperatively, two of the patients showed rapid reversal of neurologic symptoms and signs within 24-36 hours.

These patients had lesions located in the motor and visual cortex. The former lesion on pathologic examination was found to be a metastatic adenocarcinoma while the later lesion was a small intercerebral hematoma secondary to a cryptic arteriovenous malformation. The patient with the sensory cortex lesion had transient postoperative worsening of her sensory dysfunction but with increased doses of glucocorticoids and physical therapy, she has returned to baseline. This patient's lesion was a glioblastoma multiforme. Postoperative neuroimaging demonstrated no residual lesion in the operative site in any patient.

Our results demonstrate that carefully planned preoperative MRI allows accurate craniotomy placement without exposing large areas of eloquent cortex. Intraoperative neurosonography then permits accurate localization of subcortical lesions and limits the cortical resection necessary to identify and resect these masses. Combined with magnification either utilizing loupes or the microscope, operative cerebral trauma is minimized and patients experience a relatively uncomplicated postoperative course. With smaller transducing heads, intraoperative neurosonography can be applied not only to other intracranial procedures such as ventricular catheter placement, but also may play a role in spinal surgery.

Suppression of Carbamazepine-Induced Rash with Prednisone

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Carbamazepine is considered one of the drugs of choice for partial and secondarily generalized seizures. It is also the drug of choice for trigeminal neuralgia. Approximately 3% of patients develop a rash after beginning therapy with carbamazepine usually leading to discontinuation of the drug. Because the drug is sometimes the only effective medication for patients with refractory seizures or neuralgia, we attempted to suppress the rash and enable the patient to continue carbamazepine.

Nineteen patients who developed a rash after exposure to carbamazepine continued the drug while we attempted to suppress the rash with prednisone. In 15 patients the rash was successfully suppressed and carbamazepine was continued without difficulty; four patients had to discontinue the drug.

Sixteen of our patients had epilepsy; three had trigeminal neuralgia. Two of the four patients who eventually had to discontinue the drug presented with fever in addition to the rash. None of the patients with whom we had success had a fever at any time. Therapy consisted of prednisone and in half the cases an antihistamine was added. Average duration of therapy was two weeks.

In our experience the majority of patients who develop a rash after carbamazepine is begun can continue the drug while the rash is suppressed with prednisone.

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Predictors of Short-term Improvement in Diabetes Control

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Diabetes care is a complex process whose health outcome depends on improved metabolic control. A clearly positive effect of diabetes education on improved diabetes outcome is yet to be elucidated. The scanty available data are equivocal in part because educational intervention has been evaluated independent of treatment plan. We have described and established a format of outpatient diabetes care that integrates patient education with treatment. The format involves a reimbursable program at the Diabetes Care Center (DCC) to which patients are referred by their primary physician.

In this report, we have attempted to identify measurable factors at enrollment in the DCC program that predict subsequent improvement in glycemic control. Over a 16-month period, 163 subjects with uncontrolled diabetes, who attended the DCC program and completed a two-month follow-up, were studied. Glycemic control, the dependent variable, was measured by assaying glycosylated hemoglobin (HbA1C, normal 4-5.9%). Data on the following independent variables were collected at the start of the program: 1) Functional health status; 2) family function and social support; 3) health locus of control measure; 4) diabetes knowledge; 5) gender; 6) age; 7) duration of diabetes; 8) age at onset; and 9) percent of ideal body weight. HbA1C was measured both at enrollment and at two-month follow-up.

The 163 subjects were 46% male, had a mean age of 55.2 years, and a mean diabetes duration of 87.8 months. The mean baseline HbA1C was $9.6\%+0.16$, and that at two months was $7.92\%+0.12$ ($P<0.01$). Of the 163 subjects, 130 had some drop in HbA1C and 69 had a drop of at least 20% from baseline. Bivariate linear regression analysis of the association of each of the above independent variables with the dependent variable (defined as a two-month HbA1C improvement of >20%) showed that shorter diabetes duration was a strong predictor of positive two-month HbA1C response ($X=13.8$, $P=.001$), as was baseline HbA1C ($r=.57$, $P=.0001$). The likelihood of at least 20% improvement in HbA1C for study subjects with various duration of diabetes and baseline HbA1C is shown in the following table:

Baseline		**OUTCOME**	
HbA1C N 4-5.9%	*DM Duration*	*Improved HbA1C <20%*	*Improved HbA1C >20%*
>10	<2 yrs	4	23
>10	>2 yrs	15	21
<10	<2 yrs	18	24
<10	>2 yrs	51	11

Conclusion: In a referral diabetes care/education program, patients most likely to benefit are those with duration of disease less than two years who also have baseline HbA1C >10%. The results can be usefully applied by clinician to identify diabetics who are likely to benefit from an educational intervention.

Assistant Professors (Dr. Abourizk, Dr. O'Connor, Dr. Crabtree), University of Connecticut School of Medicine.

Serum Theophylline Levels During the Conversion from Intravenous Aminophylline to Long-Acting Oral Theophyline

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Five methods for converting chronic obstructive pulmonary disease patients from intravenous (IV) aminophylline to a long-acting theophylline (Theo-Dur) preparation were evaluated in 25 patients aged 50-81. Equivalent 12-hour doses of Theo-Dur were administered two hours before (Group A), one hour before (B), simultaneously (C), one hour after (D), and two hours after (E) discontinuation of the intravenous aminophylline infusion. All patients had stable theophylline levels prior to the study and 21/25 patients returned to within 10% of baseline by the end of the study period. Theophylline levels were obtained immediately before and 1, 2, 3, 4, 6, 9, and 12 hours after discontinuation of the IV aminophylline.

Group A is the method of conversion used by many physicians at Danbury Hospital. In this group the average peak elevation was 70% over baseline and all had symptoms of toxicity. In group C the average peak elevation was 23% over baseline and 3/5 had symptoms of toxicity. No patients in either group had any exacerbations of their respiratory symptoms.

In addition, nine of the 10 patients who had >3.0 ug/dL elevation in serum levels were symptomatic, while only 1/15 patients with <3.0 µg/dL peak change noted any symptoms of toxicity.

CONCLUSIONS

1. When converting from IV aminophylline to oral Theo-Dur, the Theo-Dur should be started when the IV is stopped.
2. Besides absolute levels, acute elevations in theophylline levels may also cause symptoms of toxicity.

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Scoliosis Surgery in a Steriod Dependent Asthmatic

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Investigations on the effect of scoliosis surgery on pulmonary function document reduction in forced expiratory volume at one second (FEV1), total lung volume (TLV), and forced vital capacity (FVC) with increase in closing volume over functional residual capacity (FRC). A 22-year-old steroid dependent asthmatic with over 50% thoracolumbar scoliosis was weaned off prednisolone (Medrol) and troleandromycin (TAO) with maintenance of pulmonary functions after insertion of Harrington and Luque rods. The patient had a long history of annual hospitalizations despite continuous prednisone therapy, most recently since March 1987. Hospitalization was obviated with Medrol (4 mg q.o.d.)/TAO (250 mg q.o.d.) protocol in conjunction with triamcinolone acetonide (Azmacort), three puffs q.i.d., oral theophylline (Theo-Dur) 900-1200 mg daily (level 12-20 µg%) with beta agonists as needed. Her initial (pre-TAO) FVC was 3L (86% of predicted), FEV1 2.6L (85% of predicted), FEF 25-75% 2.8L (71% of predicted). On TAO her FVC improved to 100%, FEV1 to 90%, FEV1/FVC of 89% and FEF 25-75% to 68%. She has been off TAO and Medrol for over four months with maintenance of pulmonary function.

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Convergence Insufficiency

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Department of Surgery

Convergence insufficiency is an eye-muscle disorder that has been found to be endemic in the Danbury, Connecticut area. Symptoms include headaches, diplopia, intermittent blurred vision (especially distance vision at night), eyestrain, tired eyes, loss of concentration, and sleepiness. Oftentimes a person may only be able to perform near work at five or 10 minute intervals prior to appearance of symptoms. This may interfere with learning to read or job performance (especially with the proliferation of computer terminals). Two hundred seventeen cases of convergence insufficiency were collected over 12 months in 1989 by five opthalmologists in the greater Danbury area. Epidemiology, therapy, and risk factors in determining therapeutic success are discussed. Simple treatment of the common disorder may prevent loss of valuable hours of work productivity by visual dysfunction.

Convergence Insufficiency in Eosinophilia Myalgia Syndrome: A Case Report

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Department of Surgery

Eosinophilia myalgia syndrome is a recently diagnosed entity in the last several years due to the ingestion of l-tryptophan. New onset of reading difficulties after eosinophilia myalgia syndrome has occurred in several patients. One patient examined shows signs typical for convergence insufficiency and has not responded well to conventional orthoptic training and most likely will require prism glasses for comfortable reading. Investigation into binocular dysfunction is indicated in all eosinophilia myalgia syndrome patients to elucidate any problems associated with this syndrome.

Reduction of Cat Allergens in Carpets by Tannic Acid Spray

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Allergy to the major cat allergen Fel d I is present in about 30% of asthmatics. Carpets are a reservoir for that allergen, so that after a pet cat is removed it takes more than 20 weeks for allergen levels in the home to decline. We have shown that a 3% tannic acid (TA) solution rapidly decreases the level of dust mite antigen in carpets. We studied the effect of tannic acid on cat allergen.

Dust samples were taken in the homes of cat-allergic patients, from carpeted rooms in which one or more cats spent considerable amounts of time. A 3% tannic acid solution (Allergy Control Solution TM) was applied with a hand spray pump at a rate of approximately nine sprays/m.^{2} Dust samples were collected before, 24 hours after, and one week after spraying. A High Efficiency Particulate-Arresting (HEPA) air cleaner was placed in operation at the time of spraying, and the cats were kept out of the room for the first 24 hours. Fel d I was measured with a monoclonal antibody ELISA, and expressed as μg Fel d I/gm of dust.

Home	*Before TA*	*24h p TA*	*1 wk p TA*
#1 (3 cats)	40,959.	7,227.	29,560.
#2 (2 cats)	80,130.	1,875.	1,000.
#3 (1 cat)	1,444.	483.	3,320.
#4 (1 cat)	1,357.	<8.	1,739.
#5 (2 cats)	869.	<7.	645.
#6 (1 cat)	440.	444.	1,524.
#7 (1 cat)	49,784.	300.	11,000.

Fel d I decreased from a mean of 24,998 to 1,478 after treatment ($P < .02$ signed rank test), but increased to 5,541 six days after the cats returned to the room (NS).

The use of a 3% tannic acid solution could be of clinical benefit in hastening the decline of allergen after removal of a pet cat, or when a cat-allergic patient visits a home with cats or moves to a residence where a cat had been present.

Adult Immunization Insufficiency: An Educational Issue

CHRISTINE LEAHY KEENAN, P.A. AND JACK S. C. FONG, M.D.
Department of Pediatrics

Childhood immunization programs have dramatically reduced the occurrence of many diseases. However, incidence of various preventable infectious diseases in adults is on the rise. Specifically, tetanus is now primarily a disease of older adults. Cognizant of adult immunization insufficiency, we investigated the knowledge of and attitude towards immunization in a general population.

This prospective study enrolled parents in the examining room of the Pediatric Health Center at the Danbury Hospital. The stated purpose of their visits was to bring their children for recommended immunizations; therefore, these adults should have some recognition of the value of childhood immunization. The parents were 19-33 years of age, 80% with a high school education or more. Indexed children aged from two months to three years. Fifty-seven percent of these parents felt that immunizations for adults were needed; 75% were not aware of, or able to obtain their own records, 100% could recall their last tetanus shot relating to an injury or preemployment physical. None of the participants in the study, including 28% at high risk for communicable disease, had any knowledge of hepatitis, influenza, or pneumococcal vaccine. Of the 43% of parents who felt there was not a need for adult immunization, 90% were not aware of their own immunization status. Of those with some recall, tetanus following an injury was the primary vaccine, with one parent recalling a measles vaccine following delivery of her child. Ninety-five percent felt that immunization for children was both important and necessary. However, 50% of the indexed children of these respondents were deficient in obtaining the currently recommended vaccines.

These interviews show the lack of knowledge about adult immunization and its value, in a population who may be most aware of the concept of disease-preventative vaccination. Further advances in infectious disease control may be realized through education of the adult population.

Clinical Instructor (C. Keenan), Hahnemann University Physician Assistant Program, Associate Clinical Professor of Pediatrics (Dr. Fong), Yale University School of Medicine.

Correlation of Placental Histology with Inflammatory Cytokines in Amniotic Fluid (IL1 + TNF)

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Thirty-two samples of amniotic fluid obtained by amniocentesis in the setting of either genetic amniocentesis or presentation in preterm labor were tested by ELISA for the presence of human interleukin-1 (hIL-1) and human tumor necrosis factor (hTNF). Placentas were examined for the presence of markers of acute inflammation considering both maternal and fetal components separately. In all 23 cases without histologic evidence of acute inflammation, levels of both hIL-1 and hTNF were <100 pg/ml. When maternal inflammation was subjectively graded on a scale of 1-4, a significant dose response relationship was observed between maternal inflammation and hIL-1 levels but not hTNF levels. Grading fetal inflammation on a similar four point scale, a significant correlation was observed between grade of fetal inflammation and hTNF levels but not hIL-1 levels.

Professor of Pathology (Dr. Bigazzi), Assistant Professor of Pathology and Obstetrics and Gynecology (Dr. Salafia), Instructor (Dr. Fleming), University of Connecticut School of Medicine.

Placental Pathology of Idiopathic Preterm Labor: Contribution of Acute and Chronic Processes

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Placentas from 482 consecutive pregnancies delivering preterm live-born singletons in the absence of preeclampsia or placenta previa were compared to placentas of 214 random term pregnancies delivered after spontaneous onset of labor. Umbilical vasculitis was the single most significant lesion associated with preterm delivery, seen in 40% of births 20-28 weeks, 30% of births at 29-32 weeks, 10.5% of births between 33-36 weeks, and 7.5% of births at term. At 20-28 weeks, implantation site abnormalities (defined as decidual vasculitis, thrombosis and/or absence of physiologic conversion, or decidual plasmacytosis) were common (13 of 17, 76.4%). All 10 cases without umbilical vasculitis delivering between 20 and 28 weeks had one or more implantation site abnormalities. Three of the seven (42.8%) of cases with umbilical vasculitis also had implantation site abnormalities. Chronic villitis was more frequent with increasing gestational age, and was significantly more frequent in cases delivered between 29-36 weeks when umbilical vasculitis was not present. Chronic villitis was observed in only two of 63 (3.2%) cases when implantation site abnormalities were not also present, although implantation site abnormalities were often present in the absence of chronic villitis, especially prior to 32 weeks gestation. Our data agree with other reports that intraamniotic infection (hence marked as umbilical vasculitis) is significantly related to preterm birth. Preterm birth at 20-28 weeks gestation is related to pathologic changes in the implantation site, while chronic placental villitis is associated with implantation abnormalities and with preterm birth between 32 and 36 weeks of gestation.

Assistant professor of Pathology and Obstetrics and Gynecology (Dr. Salafia), Associate Professor of Pathology and Obstetrics and Gynecology (Dr. Vintzeileos), University of Connecticut School of Medicine, and Associate Clinical Professor of Obstetrics and Gynecology (Dr. Silberman), Yale University School of Medicine .

Analysis of Reasons for and Outcome of Amniocentesis at Danbury Hospital Over a Five-Year Period

JACQUELINE P. BURNS, PH.D. AND MICHAEL DI FILIPPANTONIO
Department of Laboratory Medicine

During the early part of the second trimester of pregnancy, analysis of amniotic fluid is usually done to rule out a chromosome abnormality or a neural tube defect. Among the most frequent reasons given for performing an amniocentesis are: advanced maternal age (AMA), maternal serum alfafetoprotein (MSAFP) levels which are increased or decreased, history of a familial chromosome aberration, or maternal anxiety.

Analysis of 1,689 consecutive amniotic fluid specimens processed at Danbury Hospital during the past 64 months revealed the following results: More than 80% were done for reasons of AMA (56%), or decreased MSAFP (24.6%), or a combination of both of these together with a family history of chromosome problems or to rule out trisomy 21 (1.2%). The remainder were done to rule out: 1) the presence of a neural tube defect because of increased MSAFP only (8.2%), or in conjunction with AMA (0.3%), or to rule out trisomy 21 or other familial chromosome aberration (0.1%); 2) other chromosome aberrations because of family history (5.2%); 3) Down's syndrome (2.5%) whether or not there was a previous family history; 4) abnormal ultrasound or maternal anxiety.

The results showed 34 cytogenic abnormal findings

(2.0%), the majority (1.3%) in specimens from women 35 years of age or older. There were five abnormalities found from specimens which were ordered for decreased MSAFP (0.3%) and three because of increased MSAFP (0.2%). There was one which was ordered for both AMA and a decreased MSAFP (0.06%). If the abnormalities are categorized according to the reason for doing the prenatal test, the findings become: AMA (22/948) 2.3%; increased MSAFP (3/139) 2.2%; decreased MSAFP (5/415) 1.2%; AMA and decreased MSAFP (1/14) 7.1%.

There was a total of nine cases of trisomy 21. Of these, seven were found in women with AMA, one with abnormal ultrasound, and one with both AMA and decreased MSAFP. Therefore, trisomy 21 was found only once with a decreased MSAFP and this was in association with AMA. The low number of specimens with a decreased MSAFP may be a reason for finding only one case of trisomy 21 associated with it. Our findings reaffirm what other investigators have found, namely that patients with a low serum AFP should be counseled not only for the risk of trisomy 21, but for other chromosomal aberrations as well.

Management of Asymptomatic, Term-Gestation Neonates Born to Mothers Treated with Intrapartum Antibiotics

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Intrapartum antibiotics are frequently administered to parturient women for the treatment of suspected chorioamnionitis and to prevent or treat infection in the baby. There are no data regarding the appropriate management of apparently healthy, "pretreated," term-gestation infants born to these women.

We sent a questionnaire to the 150 United States fellowship program directors in neonatology and pediatric infectious disease, focusing on recommendations for evaluation and therapy of such infants. Eighty-three of the completed responses were analyzed. Sixteen respondents do no initial laboratory evaluation but simply observe the baby; 65 obtain a blood count with differential and platelet counts; 59 obtain blood cultures; 41 evaluate the urine for the presence of group B *Streptococcus* (GBS); and 23 perform a lumbar puncture. Only 32 respondents would begin antibiotic therapy on all pretreated infants. If the evaluation were negative, 65 directors would treat for <3 days. If only the urine GBS antigen were positive, 47 would treat for > 7 days; while if an elevated immature-to-total neutrophil ration (I:T ratio) were the sole abnormality 19 would treat for > 7 days. Forty-four respondents felt that a combination of an elevated I:T ratio and a positive urine GBS antigen should *always* be considered indicative of bacteremia. Given a different scenario, that of a mother treated with intrapartum antibiotics because of a positive cervical culture for GBS *and* a "risk factor" (eg, temperature > 38° C), 58 respondents would begin antibiotics.

In summary, there is no consensus regarding the management of pretreated, healthy-appearing, term-gestation neonates. Prospective investigations are needed to determine the appropriate management of these newborns.

Associate Professor of Pediatrics, Uniformed Services University of Health Sciences (USUHS) (Dr. Wiswell); Associate Professor of Pediatrics (Dr. Stroll), Emory University School of Medicine; Assistant Clinical Professor of Pediatrics, USUHS and Clinical Instructor of Pediatrics (Dr. Tuggle), Yale University School of Medicine.

The Antitumor Drug Tamoxifen Blocks the Wound Healing Process by Modulating Cellular Microtubule Asembly Dynamics and Protein Kinase C Activity

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The mechanism of the antitumor action of tamoxifen (TMX), a triphenylethylene agent that is used in the treatment of advanced breast carcinoma, is not entirely clear. Its antineoplastic action can not be attributed solely to its competitive binding to estrogen receptors in tumor cells because some of the effects of TMX on cell growth, spread, and proliferation can not be reversed by estrogen. To determine if TMX modulates the organization of microtubules (MTs), an important cytoskeletal component of cellular locomotion and proliferation, we used immunofluorescence microscopy to observe the effect of TMX on the MTs of serum-deprived, cultured bovine pulmonary artery endothelial (BPAE), aortic endothelial (BAE), and BH3H1 myocyte cell line *in situ*. We found that TMS (1.7-300 uM) induced microtubule disruption in the three cell lines. The TMS effect was dose-dependent with 50% of BPAE cells exposed to 5 micromol of TMS (x 2 h) exhibiting complete microtubule disassembly. The effect of TMS on MTs was associated with inhibition of 4% serum-induced BPAE cell monolayer polarization and migration responses to wounding, which were monitored by immunofluorescence and time lapse cinemicrography. Estradiol 17B(2.4-25 μg/ml) and the histamine antagonists cimetidine and diphenhydramine did not mimic or block the effect of TMX on MTs. In contrast 10 UM of sphingosine, nafoxidine, or clomiphene (protein kinase C PKC inhibitors which differed in molecular structure), mimicked the effect of TMX on MTs. The phorbol ester, 12-0-tetradecanoyl-phorbol-13-acetate (TPA, 16 micromol, which increases membrane PKC activity, blocked the effect of TMX. Furthermore, addition of TMX (250 micromol) to the membrane and cytosol fractions of endothelial cell homogenates induced a 50% decline in their PKC activities. Thus, TMX-induced MT disassembly was associated with a decrease in cellular PKC activity and inhibition of serum-induced directed cell migration, mimicked by agents that inhibit PKZC, and blocked by TPA. This novel effect of TMX on MTs may prove to be an important mechanism of TMX's action on tumor growth and metastasis.

Assistant Clinical Professor (Dr. Mascardo), University of Connecticut School of Medicine.

Evaluation of Chemiluminescence Immunoassays for Thyroxine (T_4), Thyroxine-Binding Globulin (TBG), and Thyrotropin (TSH)

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Department of Laboratory Medicine

The Amersham Amerlite system (Amersham Corporation, Arlington Heights, Ill.) is a modular chemiluminescence immunoassay (CLIA) system for measuring the concentration of hormones and tumor markers in blood. Immunoassays are performed in antibody-coated microtiter wells using either a competitive binding or immunometric assay format. A heterogeneous anti-immunoglobulin antibody is bound to the solid phase in the well and the primary antibody is in the liquid phase. The tracer molecule, luminol, is chemiluminescent. When this substrate is catalytically oxidized by hydrogen peroxide and horseradish peroxidase in the presence of a chemical enhancer, a sustained emission of light energy results. The intensity of this light signal is measured by a high sensitivity luminometer and is related to the concentration of antigen in the sample. In combination with a robotic pipetting station (TECAN US, Hillsborough, NC), the Amerlite system appeared to be a promising candidate to achieve our goal of replacing labor-intensive radioimmunoassays (RIA) for thyroid function tests with a more automated, nonisotopic methodology.

Therefore, we evaluated the precision and accuracy of Amersham's CLIA procedures for T_4, TBG, and TSH. For each assay, imprecision was determined at three levels with a human serum quality control material. Interassay coefficients of variation (CV) were less than 10% for all assays and compared favorably with those obtained by RIA. The low-end imprecison of the TSH CLIA was determined using a serum pool from hyperthyroid patients and was also found to be acceptable (CV=10.7% at 0.28 μIU/mL). Accuracy was assessed by obtaining paired results on patient samples using both the Amersham CLIA and our current RIA method (CIBA Corning Diagnostics, Medfield, Mass.). Linear regression analysis of this data gave the following results for slope, y-intercept and correlation coefficient (r):

	n	*slope*	*intercept*	*r*
T4 (μg/dL	60	0.886	0.786	0.930
TBG (mg/L)	60	0.816	3.48	0.924
TSH (μIU/mL)	91	1.00	0.031	0.995

These results, as well as those obtained from recovery and dose-response studies, were judged to be acceptable.

In conclusion, the Amerlite CLIA system is a viable alternative to RIA for the measurement of T_4, TBG, and TSH.

Clinical Associate, Laboratory Medicine (Dr. Sena) University of Connecticut School of Medicine.

Pre- and Posttrauma Support Team Analysis

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Trauma victims, families, and staff have emotional, spiritual, and social needs related to the trauma event. A multidisciplinary, collaborative group (TST) was formed to address these needs in the hospital, and after death. Their effect was tested.

A before and after analysis measured the effect of TST. A questionnaire was mailed to 160 families prior to TST (39% responded). The same questionnaire was mailed to 96 matched families after implementation of TST (45% responded). Responses were compared, and modifications to the TST were implemented.

Waiting time to learn the victim's condition decreased from 135 minutes in pre-TST group to 110 minutes. There was increased family understanding of patient's condition (60% to 86% p=.009). Areas identified as weak were subsequently integrated into TST; these are: improving transition from hospital to home care, and longer follow-up for psychosocial counseling. The percentage of families who graded the emotional support given them at the hospital as excellent or good increased from 58% to 62.5%. Six percent of families post-TST felt emotional support was inadequate. Over 97% of both groups rated interchange with the nurse as beneficial.

A structured team responding to emotional needs of trauma victims, families, and staff was formed and a program implemented. This improved the psychosocial care of patients, family, and staff.

Assistant Professor (Dr. Schwartz), Professor (Dr. Jacobs), University of Connecticut School of Medicine.

Aeromedical Transport of Cardiac Patients

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The safety and required technical skills of cardiac transfers to tertiary care hospitals is unconfirmed.

All flight records of cardiac patients transported by ahospital emergency medical service (HEMS) from June 1985 to March 1988 (n=207) were reviewed for age, gender, vital signs, use of endotracheal intubation and invasive lines (A-line, CVP, Swan-Ganz), ground time, medications, complications in flight, and reasons for transfer. Excluded were those patients in full cardiac arrest when the flight crew arrived. The remaining patients were categorized into 2 groups: Systolic Blood Pressure (SBP) $>$ 90 mmHg (n=157), and SBP $<$ 90 mmHg (n=37). Major complications were defined as cardiac arrest, new arrhythmias, change in SBP to $<$ 90 mmHg, or anaphylaxis. Minor complications were worsening chest pain or a clotted or pulled invasive line.

Two groups were similar in age and gender. Table 1 summarizes other variables.

Table 1

Total	*n=57*	*n=37*
No medications	24 (15%)	5 (13%)
Multiple medications	112 (66%)	27 (84%)
Intubation	26 (17%)	18 (49%)*
Invasive line	33 (21%)	16 (43%)*
Minor complications	20 (13%)	2 (5%)
Major complications	14 (9%)	4 (11%)

* *P* = .0001, *P*= .005

An aeromedical crew can transport normotensive and hypotensive cardiac patients with similar complication rates. Unstable cardiac patients are relatively safe for aeromedical transfer.

Assistant Professors (Dr. Gabram, Dr. Schwartz), Professor (Dr. Jacobs), University of Connecticut School of Medicine.

The Role of an Aeromedical Service in Response to Mass Casualty Incidents

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Our hospital emergency medical service (HEMS) has responded to 12 mass casualty incidents (MCI) in two years. Eight were drills and four were actual events. An MCI response plan was instituted prior to the onset of the HEMS program.

All MCI (six or more critically injured victims) were reviewed to determine actual victims, victims, knowledge of MCI prior to lift off, and roles of the HEMS. The actual roles were compared with the preestablished roles.

The four actual MCIs, a building explosion, hotel fire, bus rollover, and plane crash were reviewed. There were 67 victims involved. Prenotification occurred in only one MCI. The roles of the flight crew in each MCI were: (triage of casualties [n=4], medical treatment [n=4], transport [n=3], augmented response [n=1], and air surveillance [n=0].

Table 1

Event	*Augmented Response*	*Triage*	*Medical Treatment*	*Air Surveillance*	*Evacuation*
Explosion		X	X		
Hotel Fire		X	X		X
Hotel Fire		X	X		X
Bus Rollover		X	X		X
Plane Crash	X	X	X		X

The roles of a HEMS response to a MCI should be well-defined prior to an event. Aeromedical benefits include response within a large geographic area, identification of appropriate trauma-receiving hospitals, and facilitation of patient transport. Even without prenotification, a prepared HEMS can respond to a MCI and perform multiple roles; however, continuing education of the EMS personnel is essential to optimize the trauma care.

Assistant Professor (Dr. Gabram), Professor (Dr. Jacobs), University of Connecticut School of Medicine.

Project India - A Preliminary Evaluation of an International Project in Emergency Services

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The Danbury Hospital Department of Emergency Medicine in December 1988 established a partnership with the Association for Trauma Care of India to encourage the formation of emergency services in India, with the Danbury Hospital providing technical assistance. A fellowship was established whereby senior physicians from India could come to Danbury and study the working of a department and the Connecticut State Emergency Medical System. In August 1989 three physicians from India visited the hospital, one of whom availed himself of the fellowship to study the program in detail. As a result of this exposure, a pilot project was created on a 260 km sector between Pune and Kolhapur on National Highway #4, which is responsible for 25% of the state accident fatalities. EMT training programs were organized and physician training programs have been started. With seed money for the project from the hospital, other sources were contacted. Donations in money and equipment have been forthcoming and the United States Public Health Service has supported the project.

The project has since been expanded to two other national highways, and its scope changed from accident and trauma to comprehensive emergency health care. Leading physicians from the EMS of Connecticut will travel to India to conduct the first ACLS and ATLS Courses in August 1990. The Indian physicians plan to form the Indian College of Emergency Physicians which will provide personnel to meet their manpower needs. An international meeting of emergency health care is planned for December 1991 in New Delhi. The Emergency Department of Danbury Hospital plans to continue to help their Indian colleagues in meeting these goals.

Lecturer (Dr. Terranova), Yale University School of Medicine.

Community Acquired Pneumonia in the Outpatient Setting: A Retrospective Analysis of Management and Outcome

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Department of Medicine

The records of 170 patients with pneumonia, defined as the presence of an infiltrate on the chest X-ray film, were reviewed.

Demographics were as follows: males 88 (52%); females 82 (42%); average age 39 (range 1-89); 55 (32%) were smokers; and 58 (34%) had one or more underlying conditions. The average temperature was 38°C. Forty-six (27%) patients had a temperature of 37°C and only 26 (15%) had a temperature over 39°C. Tachycardia (over 100) was present in 48 (28%) patients; tachypnea in 30 (18%) patients; and systolic blood pressure less than 100 mm Hg was found in nine (5%) patients.

The most common presenting symptom was cough, present in 128 (75%) of patients, which in 81 (47%) was productive. Other symptoms included chest pain: 54 (31%); dyspnea: 34 (20%); and headache: 19 (11%). Infiltrate was located in the upper lobe in 43 (25%) of patients; multilobar involvement was present in 29 (11%).

Twenty-four patients were admitted. Compared with those not admitted these were older (52 yrs. vs 39 yrs.), more likely to have underlying diseases (79% vs 34%), smoked cigarettes (41% vs 5%), tachycardia (42% vs 26%), tachypnea (33% vs 16%), chest pain (46% vs 29%), and dyspnea (42% vs 16%). Six of 24 patients were hospitalized after failure of initial outpatient therapy.

Erythromycin was prescribed most frequently [79 patients (46%)], followed by amoxicillin or augmentin [29 patients (17%)]. Four patients received no antibiotic. Erythromycin was used more frequently with upper lobe involvement (60% vs 34%) and headache (58% vs 45%). Patients with COPD received erythromycin less frequently (22% vs 46%). Amoxicillin with or without clavulonic acid was prescribed more frequently in smokers compared to nonsmokers (27% vs 13%) than erythromycin (33% vs 57%). The presence of productive cough or diarrhea did not influence antibiotic choice.

Change in antibiotic occurred in 21 patients; five having more than one change. In nine patients, change was due to failure of therapy. Gastrointestinal distress prompted change in five patients (erythromycin). One hundred twenty-six (74%) patients had documented follow-up. All were better by either follow-up chest film or clinical examination.

Pneumonia seen in the primary care setting was usually of undefined etiology, was treated successfully with either erythromycin, ampicillin derivatives, or other oral agents, and rarely required hospitalization. Requirement for hospitalization could be predicted by age, underlying disease, presence of dyspnea, tachypnea, tachycardia, chest pain, and fever greater than 39°C.

Associate Clinical Professor (Dr. Kunkel), Yale University School of Medicine.

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DRUG INFORMATION UPDATE: HARTFORD HOSPITAL

Ketorolac Tromethamine

GENE T. JAY, B.S., R.PH.

Introduction

KETOROLAC (Toradol®) is a novel parenteral nonsteroidal anti-inflammatory agent indicated for the short-term management of moderate to severe pain. Although available orally and parenterally in Europe, ketorolac is only currently FDA approved for intramuscular use. Clinical studies have shown ketorolac to be as effective as parenteral morphine in eqipotent doses and because of side-effect profile (eg, lack of hypotension and respiratory depression; less sedation and nausea) ketorolac may replace narcotics in selected instances such as outpatient day surgery.

Mechanism of Action

Like other nonsteroidal anti-inflammatory drugs (NSAIDs), ketorolac inhibits prostaglandin biosynthesis by inhibiting the cyclooxygenase enzyme pathway.[1,2] Ketorolac, which is structurally similar to tolmentin (Tolectin®), has been shown to be 350 times more potent than aspirin as an analgesic,[1,2] whereas the anti-inflammatory and antipyretic effects are slightly less pronounced.

Pharmacokinetics

Absorption following intramuscular (IM) administration is 100%, with onset of pain relief and peak serum in levels occurring in 10 minutes and in 45-50 minutes, respectively.[3,5,9] Ketorolac is very highly protein bound (99.2%),[5] and penetrates very poorly into the central nervous system.[3]

Fifty-eight percent of a ketorolac dose is excreted renally as the parent compound.[3] Approximately 42% is metabolized by the liver to the glucuronide and parahydroxy metabolites which are also eliminated via the kidney. For this reason, the half-life of ketorolac is highly dependent upon kidney function. In normal adults the half-life is about four to six hours.[4,5] In the elderly, however, the half-life averages about seven hours, and in renally impaired individuals (serum creatinine 1.5-5.0 mg/dL) half-lives average 9.6 hours.[6,7] Hepatic impairment (alcoholic cirrhosis) increases the half-life about an hour, which may or may not be clinically significant.[8]

Clinical Studies

Ketorolac has been extensively studied in the treatment of postoperative pain. Morphine is the "gold standard" narcotic analgesic to which all synthetic and natural narcotics are compared. Ketorolac has been compared to morphine in several large double blind trials.

Yee et al in a single dose study compared intramuscular ketorolac 10, 30, and 90 mg vs. intramuscular morphine sulfate 6 and 12 mg in 241 postoperative patients.[10] Surgical procedures were classified either as major surgery (eg, cholecystectomy, laminectomy, abdominal hysterectomy) or as general surgery (eg, tendon or ligament repair, meniscectomy) and patients were randomly assigned to receive one of the study drugs within 48 hours after the procedure. In the general surgery group, 10, 30, and 90 mg ketorolac were all superior to morphine 6 and 12 mg, while in the major surgery group 10 and 30 mg of ketorolac were significantly superior to 6 mg of morphine, and at least equivalent to 12 mg of morphine. Ketorolac 90 mg was significantly superior to morphine 12 mg, and ketorolac 10 and 30 mg. It should be noted, however, that in the general surgery group, the analgesic effect of 6 and 12 mg of morphine was indistinguishable, and ketorolac 10 mg was more effective than ketorolac 30 mg, indicating that the pain was too mild for either agent to show a dose-response relationship. In the major surgery group, 90 mg of ketorolac was superior to 10 and 30 mg of ketorolac, and morphine 12 mg was superior to 6 mg indicating that the pain was sufficiently severe to allow for a dose differentiation.

O'Hara et al also studied single-dose ketorolac and morphine by intramuscular administration in 155 postoperative patients with moderate to severe pain.[11] Patients were randomized to receive ketorolac 10, 30, or 90 mg or

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Editors: Moses Sing Sum Chow, Pharm. D., and Robert A. Quercia, M.S., R.Ph.

morphine 6 or 12 mg on postoperative day one or two. Surgical procedures were gynecologic, orthopedic, or general abdominal. At the three-hour assessment, ketorolac 30 mg and 90 mg, and morphine 12 mg, were equal to each other but superior to 6 mg morphine and 10 mg ketorolac. Ketorolac, 30 mg and 90 mg, were significantly better than morphine 12 mg, at the six-hour total pain relief assessment. As in the study by Yee et al, ketorolac 30 and 90 mg were indistinguishable in terms of pain relief, for general surgery patients.[10]

Powell et al in a double-blind, multi-dose, randomized trial of 80 patients compared intramuscular ketorolac and morphine.[12] Ketorolac was given as a 30 mg loading dose, then 10 mg every four hours as needed. Morphine was given as 10 mg loading dose, then as 10 mg every four hours as needed. The median time until a second dose was requested was 4.67 hours in the ketorolac group, and 4.63 hours in the morphine group. Both pain relief scores and overall assessment of pain were not significantly different between the two groups. The authors concluded that ketorolac 10 mg provided analgesia comparable to morphine 10 mg.

Fricke and Angelocci evaluated the analgesic efficacy of intramuscular ketorolac (10, 30, and 90 mg) and intramuscular meperidine (Demerol®) 50 and 100 mg for the control of postoperative dental pain, in a multiple dose, double-blind trial of 145 patients. Pain relief scores showed ketorolac 30 mg and 90 mg to be equal in efficacy and both doses were superior to meperidine, 50 mg and 100 mg, as well as ketorolac 10 mg. A single dose study also showed ketorolac 30 mg and 90 mg to be superior to meperidine 50 mg and 100 mg over a six-hour period.[14]

Ketorolac has also been shown to decrease the total narcotic requirement when administered concomitantly with several parenteral narcotics. Gilles et al in a randomized, double-blind trial evaluated cumulative morphine requirements using a patient-controlled analgesia system while coadministering ketorolac by continuous intramuscular infusion, (1.5 mg/hr or 3.0 mg/hr) in postoperative patients.[15] Total morphine consumption was decreased by one third (from 78 mg to 53 mg), and pain scores were significantly improved in the groups receiving intramuscular ketorolac. Postoperative respiratory depression (defined as increased PCO_2) was also less in the ketorolac groups.

Several other studies compare ketorolac by the oral route for chronic conditions such as cancer pain[16] and postoperative gynecological surgery[17] with favorable results. Also, ketorolac has been studied for treatment of postoperative ocular inflammation as a 0.5% solution with good results.[18]

Adverse Drug Reactions

Ketorolac has a side effect profile similar to other NSAIDs. In clinical studies, 23% of patients reported some type of nervous system effect, such as somnolence, headache, or dizziness. Dyspepsia, GI pain, nausea, and vomiting occurred in 3%-9% of patients. Taken chronically, ketorolac has been shown to cause gastrointestinal bleeding and ulceration at an incidence of 1.2-5.4% which is similar to other NSAIDs. In one study, ketorolac showed gastrointestinal mucosal damage at doses as low as 10 mg IM four times daily.[19] However, mucosal injury is dose related, and 10 mg and 30 mg IM doses of ketorolac cause significantly less damage and fewer lesions than aspirin 650 mg orally four times daily.

Bleeding time is modestly prolonged with single doses of ketorolac (from 4.9 minutes to 7.8 minutes) because of inhibition of platelet aggregation.[20] Prothrombin times and partial thromboplastin time are not affected, and inhibition of platelet function disappears within 24-48 hours.

Other adverse reactions thought to be related to ketorolac are pruritis, vasodilation, and sweating. Pain at the injection site occurs in 2% of patients. Patients with allergies to other NSAIDs probably should not receive ketorolac. Respiratory function is practically unaffected by ketorolac.[21]

Drug Interactions

NSAIDs are not recommended for use in conjunction with ketorolac because side effects may be additive, and they have been shown to displace ketorolac from plasma protein binding sites, increasing pharmacological activity.

Warfarin's binding to plasma proteins may be reduced by concurrent administration of ketorolac, and hence increasing the free plasma levels of warfarin. Strict monitoring for clinical signs of bleeding would be prudent while coadministering these drugs.

Since other NSAIDs inhibit the clearance of lithium and methotrexate it is advised to avoid this combination or monitor serum levels of lithium or methotrexate while the patient is receiving ketorolac.

Dosage and Cost

The recommended dosing of ketorolac for treatment of postoperative pain is a 60 mg IM loading dose followed by 30 mg IM every six hours either scheduled or as needed. However, clinical studies have shown that moderate pain may respond to a 10 mg IM dose. In the elderly or other renally compromised patients, the recommended dosing is 30 mg IM (as a loading dose) followed by 15 mg IM every six hours either scheduled or as needed. The acquisition cost of ketorolac is $5.18 per 30 mg IM dose, while morphine costs about $0.50 per 10 mg injection.

Conclusion

Ketorolac is the first parenteral NSAID available in the United States for pain management. This agent has several advantages over parenteral narcotics in the treatment of postoperative pain including lack of respiratory depression, and hypotension, as well as less sedation, drowsiness, and nausea. These advantages should be particularly valuable in outpatient day surgery. Also, patients who cannot tolerate narcotics because of past abuse or allergy would be candidates for ketorolac therapy. Ketorolac, although significantly more expensive than most narcotic analgesics, should be a useful alternative for those patients intolerant to the adverse effects of narcotics and in outpatient day surgery. Currently ketorolac is restricted to use in outpatient day surgery at Hartford Hospital.

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The Health Care of AIDS Patients

Requirements for Administrative and Organizational Support Within Institutions

THE CONNECTICUT INFECTIOUS DISEASE SOCIETY

IT is the opinion of the Connecticut Infectious Disease Society that the care of HIV infected patients in the State of Connecticut is frequently fragmented and lacking in institutional support. The following recommendations are largely addressed to the state legislators, hospital administrators, and other institutional personnel who are responsible for planning AIDS care services.

The care of HIV infected patients requires both flexibility and an appreciation of the need for annual expansion. Support services for AIDS care cannot be static; a system must evolve that does not lag behind needs. The essential elements of such a program are outlined below.

Outpatient clinics: An AIDS Care Program requires defined outpatient space and staff, such as nurses, aides, secretaries, blood drawing technicians (who can access central venous catheters), and facilities for blood transfusion and administration of parenteral medications. Provision for appointment visits, drop-ins, prescription refills, and immediate referral for radiology procedures, specialty, and emergency care are essential. Clinical staff must be readily able to transfer care and responsibilities between hospital, clinic, and home therapy services when necessary. Outpatient intravenous therapy services should be an integral part of this program.

Management staff and clinical coordination: Each institution should support one clinician professionally trained to coordinate the AIDS care program and staff. This should not be left to those actually providing clinical care. At the clinical level one of the most important resources in any program is the clinical coordinator who serves as both the point of continuity for patient care and as a communicator between physicians and patients. Each institution should be prepared to support at least one such individual, usually a physician's assistant or nurse practitioner. The clinical coordinator function should be separate from that of any research personnel involved in clinical trials, whose funding would originate from sponsored grants.

Education and counseling staff: An effective AIDS care program requires trained counselors in the areas of substance abuse, human sexuality, HIV transmission, pregnancy, and pediatric issues. These individuals may often be distinct from the medical and nursing staff by virtue of their special training and job descriptions. They are essential to the success of a global AIDS program, as measured by its ability to decrease viral transmission.

Social work staff: One or more social workers who function specifically to attend AIDS-related issues in disability, housing, insurance, job discrimination, and drug treatment programs must be made available by the institution.

Medical staff: The reluctance of physicians to work with HIV-infected patients is less related to prejudice against infected populations, or the fear of contracting HIV infection, than to financial concerns. Economics plays an important role in discouraging physicians from devoting the intense efforts required to care for some of the most disadvantaged patient groups that are affected. Institutions must be able to provide financial support to the medical and surgical staff working with these patients. Staffing support must be flexible enough to allow expansion as the numbers of clinic visits, admissions, etc. continue to rise. Funding for AIDS related issues and educational material should be provided. Institutions with small but expanding numbers of AIDS patients should consider beginning programs with half-time equivalent positions rather than attempting to rely upon existing services.

Institutions which offer infectious disease and other training programs must consider providing direct salary

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support for clinical fellows with activities specifically directed towards AIDS care. Program directors, on the other hand, may need to provide funding for an additional training year(s) to allow fellows to qualify for board certification in either infectious diseases or another subspeciality, since there is no board certification in AIDS care per se. For smaller institutions the AIDS patient population might be absorbed into existing clinics (eg, primary care, infectious disease) if adequate support services, as defined above, are provided. Such programs should incorporate consultation by infectious disease specialists with an interest in HIV infection on a periodic basis. It must be emphasized again that none of these options are reasonable without adequate support services.

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50 Years Ago

From the *Journal of the Connecticut State Medical Society*

May 1941

The General Practitioners' Section

Medical practice is passing through one of the greatest upheavals it has ever known. So much is transpiring within our own country that we are almost breathless in our attempts to keep pace. Hospital insurance, various plans for medical care, specialty certifying boards, the growing changes in medical education, and now the changing status of the general practitioner. If, as Doctor Fishbein has said, 80% of the ills of our people can be cared for by the general practitioner and his little black bag it must be obvious to many, if not to all, that this particular gentleman is receiving very little attention in these turbulent days. On all sides we learn of physicians preparing for this specialty and that, taking examination for some particular certifying board or pursuing post-graduate work in some specialty. While all this is transpiring the general practitioner continues to be the family councilor in medical matters, the liaison officer (some have called him an errand boy) between his patient and one or more specialists, the bulwark of medical practice in every community. In many hospitals he has found his position on the staff so curtailed that he is permitted to do little more than leave his patient at the main entrance. He has been criticized by his fellow practitioners for not availing himself of some of the opportunities for post-graduate education. Perhaps his incentive is gone. Perhaps he feels that he is losing the important position he formerly held in medical practice.

In the April issue of the *Journal* appeared a letter from one of our members entitled "The Need for a General Practitioners' Section in the Connecticut State Medical Society." As the writer of that letter states, such a section is now operating in Westchester County, New York, and in Wayne County, Michigan. To many the organization of a society (or section) representative of a majority of medical men will seem a confession of failure on the part of the parent organization to serve the interests of the majority. This may be true of our Society, you are the one to judge. There is a need for more general practitioners today and there will be the same need tomorrow. They must be trained and afforded a place in our hospitals and in our medical societies. They must have opportunities to meet on common ground and discuss their own problems as do the specialists. If such is the case some move must be made to encourage and support them. Some suggest a general practitioner on each specialty board; others, a general practitioners' board. It is proposed to form a General Practitioners' Section within our State Medical Society at the annual meeting in Bridgeport. Doctor Arthur B. Landry, President of the Society, will preside at the organization meeting and as the speaker Mr. James E. Bryan, Executive Secretary of the Medical Society of the County of Westchester (N.Y.) has been secured. Are you interested in it? If so, let yourself be heard.

—Editorial from *The Connecticut State Medical Journal*, May 1941.

Message From Your Medicare Carrier

GERALD I. BLANK, M.D.

"FRAGMENTATION" has become one of the dominant issues in billing for Medicare services. HCFA currently spends a great deal of time and thought on this subject, and it behooves the medical community to consider this problem seriously as well. As long as the Medicare program has existed, "fragmentation" or the dividing of the medical service into its component parts has required attention. It became a more serious problem with the 1984 fee freeze. Since the fee was frozen for the basic service, attention was paid to those services that had been included with that service which could be billed separately in addition to the basic service. Examples of these services are fees for drawing blood specimens or for dressings.

Unfortunately, different carriers handled these issues differently. When one carrier started to pay for obtaining blood specimens it was difficult for others to deny it. The end result was that the carrier decisions on what should be included in a basic service varied markedly from place to place; many of these differences cannot be defended on the basis of regional practice differences or costs of practice differences.

Now that a fee schedule based on codes will be instituted by HCFA in 1992 fragmentation of codes must be eliminated in order to create the uniformity which is the goal of the system. HCFA is in the process of developing guidelines for "global services," or services that encompass many other services; in actuality almost every service is a "global service."

An office visit consists of many subservices. An interval history, physical examination, evaluation of prior therapy and the response to it, discussion with the patient about the current therapeutic plan, and evaluation of his or her current status, restatement of medications and additions or subtractions, arranging for further laboratory or radiologic evaluations, and last, but far from least, writing a note in the chart and billing out requisitions for further evaluations. This list does not even include the obtaining of specimens and conversations with the family, nor does it include ancillary services such as the telephone calls for questions about medications, new or old symptoms, or results of laboratory tests.

A simple surgical procedure would include the review of the chart prior to surgery, reading the results of consultations, laboratory tests and X-rays ordered the previous day, speaking with the patient preoperatively, scrubbing up, preparing and draping the operative site, entering the operative cavity, lysing adhesions, exploration of the cavity, dissection with careful avoidance of tissues that should not be injured, performing the procedure, obtaining of biopsies, cultures, etc., replacement of displaced organs, placement of drains, layered closure procedures, dressing, and writing postoperative orders and postoperative notes. Thereafter the daily visits and all they entail are usually included in the procedure.

Anyone reading the list of activities involved can find several items which would be billable when performed separately. Some physicians or their billing personnel have done precisely that. Frequently, it is assumed that if there is a CPT-4 code for it, it can be billed. This is not the case. The CPT-4 has been constructed to identify procedures; it is specifically stated in the introduction that inclusion of a code does *not* imply endorsement of the procedure or health insurance coverage or reimbursement.

This brings us to a discussion of the CPT-4. This listing is published yearly by the AMA. It is revised with the assistance of an editorial panel, mostly physicians, whose names appear in the front of the book. Beneath the list is a list of the advisory panel and which organizations they represent. If you have recommendations for additions or changes, you should get in touch with the advisor who best represents your interests; it is important for you to review the parts of this manual appropriate to your specialty.

When you review the CPT-4 there are two concepts that deserve special attention. The first is an item which appears in parentheses under many procedures. It is "separate procedures," and is defined on page 85 of the

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1991 edition as a "...commonly carried out as an integral part of total service and as such does not warrant a separate identification. When it is done independently..., it may be listed as a "separate procedure." As you see, these procedures should not be coded nor a fee billed when they are performed as a part of another total service. The fee should be listed for the total service.

A second item which deserves some attention is an indented procedure beginning with the word "with." An example is:

55810	Prostatectomy, perineal radical;
55812	with lymph node biopsy(s)

In this case a claim should not be coded with both 55810 and 55812 but merely with 55812 since that includes both codes and both procedures.

HCFA has developed a program for rebundling to be added to our current claims processing program. This automated system will not allow payment for any code that is included in another billed code. I would suggest that billing practices be examined in your offices to eliminate possible accusations of fragmented billing. As usual, there may be penalties associated with improper fragmentation. In addition, offices found to be fragmenting their billing run the risk of attracting a postpayment review with a resulting request for repayment of past overpayments. The anticipated date that this new system will be in place is 1 May 1991.

Another important date to keep in mind is 1 July 1991. On this date HCFA intends to have a "Global Services" policy in effect. On 8 January 1991 a proposed notice was published in the "Federal Register" on "National Standardization of 'Global Surgery' Policy." This notice outlines the policy HCFA plans as well as the "Physician Payment Review Commission's" recommendations on the subject. Comments on this proposal were invited through 11 March 1991. Prior to implementation you will be receiving notice of the precise provisions of this policy in our regular newsletter to physicians. We will get this new information out to you as soon as we receive it.

The periodic publication of these messages are an attempt to avoid situations for you and your office that may prove embarrassing. I appreciate your taking the time to read these comments and hope that you will find them of value.

Congress Hears Plan to Reform Health System

In testimony before the House Ways and Means Committee, AMA Executive Vice President James S. Todd, M.D., called for employment-based health insurance for the 20 million working Americans who do not have health coverage through their jobs. Initially, only very large employers would be subject to the requirement. Over time, it would apply to all employers. Dr. Todd proposed a series of changes in the insurance market, including financial incentives for small companies, that would enable all employers to provide health coverage. He also supported Medicaid reform to ensure that people below the federal poverty level receive benefits.

"A consensus is emerging in the debate about health system reform," Dr. Todd told the committee. "The AMA is attuned to the consensus, is initiating leadership for reform and is willing to work with others to achieve the best for patients and health care providers," he said.

—AMA *This Week,* May 6, 1991.

The Implications of Wilder vs Virginia Hospital Association for State Medicaid Programs

SHEILA TAUB, J.D.

ON 14 June 1990 the United States Supreme Court decided a case with potentially far-reaching implications for state Medicaid programs. In Wilder vs Virginia Hospital Association the court ruled that hospitals may sue the states in federal courts under the civil rights act to challenge the adequacy and reasonableness of state Medicaid reimbursement plans.[1] Although a number of federal appellate courts had previously issued similar rulings, it was not clear that the Supreme Court would accord Medicaid providers this right, because the Medicaid statute itself is silent on this issue.

From the time of enactment in 1965 until 1981, the Medicaid Act required states to reimburse hospital Medicaid providers according to the reasonable cost of services actually provided, measured according to standards adopted by the Secretary of Health and Human Services (HSS). Congress amended the Act in 1972 to give states more flexibility to develop methods and standards for reimbursement, but retained the requirement that the rates reimburse the reasonable cost of the services provided. In 1981, in an attempt to curb inflation in the cost of health care, Congress enacted the Boren Amendment, which authorized the states to devise payment rates for hospital services "which the State finds, and makes assurances satisfactory to the Secretary (of Health and Human Services), are reasonable and adequate to meet the costs which must be incurred by efficiently and economically operated facilities."[2] Each state was free to set reimbursement rates according to its own methods, subject to review only by the Health Care Financing Association (HCFA). The states could establish statewide or classwide rates, or rates based on prospective cost, or include incentive provisions to encourage efficient operation.

States are required to make a finding at least annually that their rates are "reasonable and adequate," but they are only required to submit assurances to that effect to the secretary of HHS when they make a change in their reimbursement rates. The following information must be submitted with the assurances: the amount of the estimated average proposed payment rate for each type of provider; the amount by which the rate is increased or decreased in relation to the preceding year; and an estimate of the short-term, and to the extent feasible, long-term, effect the new rate will have on the availability of services, the type of care furnished, the extent of provider participation, and the degree to which costs are covered in hospitals that serve a disproportionate number of low-income patients. The secretary may request that a state provide additional background information if he believes it is necessary for a complete review of the state's assurances.

The Secretary of HHS reviews only the reasonableness of the assurances provided by a state and not the state's findings themselves. States are not required to submit the findings themselves or the underlying data. The Act does not define the terms "reasonable and adequate" or "efficiently and economically operated facilities," nor has the Secretary, leaving the states free to make their own determinations of what those terms mean.

The Virginia Hospital Association (VHA), a nonprofit corporation composed of public and private hospitals operating in Virginia, filed suit in 1986 claiming that Virginia's reimbursement scheme violated the Medicaid Act because payments made to hospitals pursuant to the scheme were not tied to the costs incurred by an efficient and economical hospital. VHA sought a court order that would require the state to promulgate a new state plan providing new rates and, in the interim, reimbursement of Medicaid providers at rates commensurate with payments under the Medicare program.

Under the state's plan, which was approved by the Secretary of HHS, reimbursement rates for various types of medical services and procedures were fixed in advance. Providers were divided into "peer groups" based on their size and location and reimbursed according to a formula based on the median cost of medical care for that

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peer group as computed for 1982 and adjusted annually to account for inflation. Until 1986, to determine the annual reimbursement rates, the 1982 baseline figures were adjusted by the consumer price index (CPI). In 1986 the plan was amended so that the baseline figures were adjusted by an inflation index tied to medical care costs.

VHA challenged the method of computing the baseline median costs for 1982, the use of the CPI rather than an index tied to medical care costs to adjust the rates in the years 1982-86, and the way in which the medical care cost index was used after 1986. VHA also claimed that the appeals procedure established by the state plan was inadequate under the Medicaid Act, in part because it excluded challenges to the principles of reimbursement.

The precise legal issue the Supreme Court had to decide in Wilder was whether the Boren Amendment is enforceable in an action under the federal civil rights act.[3] The Court of Appeals for the Fourth Circuit ruled that it was, based on the language and legislative history of the Boren Amendment.[4] Five of the nine justices on the Supreme Court agreed, but they did not decide whether the rates set by the state were in fact inadequate. That issue has yet to be determined at a trial on the merits.*

Prior Supreme Court cases involving other fact patterns had established the principle that plaintiffs may seek relief under the civil rights act for violations of federal statutes, with two exceptions: 1) where the statute does not create enforceable rights, privileges, or immunities within the meaning of the civil rights act, or 2) where Congress has foreclosed such enforcement of the statute in the enactment itself.[5] Virginia argued, first, that the Boren Amendment does not create any enforceable rights, and second, that Congress had foreclosed enforcement of the act under the civil rights act, but the Supreme Court resolved both issues against the state.

The majority said that whether the Boren Amendment creates a federal right that is enforceable under the civil rights act turns on whether the provision in question was intended to benefit the putative plaintiff (in this case, hospitals). If so, the provision creates an enforceable right unless it reflects merely a congressional preference for a certain kind of conduct rather than a binding obligation on the governmental unit,[6] or unless the interest the plaintiff asserts is so vague and amorphous that it is beyond the competence of the judiciary to enforce.[7] The majority found that neither of these exceptions applied, and concluded that the Medicaid Act does create an enforceable right to reasonable and adequate reimbursement rates.

The majority found clear evidence that prior to passage of the Boren Amendment Congress intended that health-care providers should be able to sue in federal court to ensure that they were reimbursed according to reasonable rates. There were many such suits during the 1970s. After several states froze their Medicaid payments to health-care providers, Congress amended the Medicaid Act in 1975 to require states to waive any Eleventh Amendment immunity from suit for violations of the act.[8] Although the waiver provision was quickly repealed because of opposition from the states, Congress explained that it did not intend the repeal to be construed as in any way contravening the rights of the providers of Medicaid services to seek relief in a federal or state judicial forum.

The majority also rejected Virginia's argument that the obligation imposed by the Boren Amendment is too vague and amorphous to be judicially enforceable. The statute and regulations require the state to consider certain factors prior to adopting its rates, such as whether a hospital services a disproportionate number of low-income patients. In addition, the statute requires the state, in making its findings, to judge the reasonableness of its rates against the standard of an "efficiently and economically operated facility" providing care in compliance with federal and state standards while at the same time ensuring "reasonable access" to eligible participants. The majority found it well within the competence of the judiciary to determine whether a given set of rates was outside the range that a state could ever find to be reasonable and adequate under the Act.

The majority found that Virginia did not sustain its burden of proving that Congress intended to foreclose private enforcement of the Medicaid Act under the civil rights act. The Medicaid Act does not expressly preclude resort to the civil rights act, and the Supreme Court had previously found that in the absence of such an express provision, private enforcement is foreclosed only when the statute itself creates a remedial scheme that is sufficiently comprehensive to demonstrate congressional intent to preclude the remedy of suits under the civil rights act. The Supreme Court found this standard had been met on only two occasions,[9] but the Medicaid Act contains no provision for private judicial or administrative enforcement comparable to that which was present in the statutes involved in those cases. It merely authorizes the secretary to withhold approval of plans or to curtain federal funds to states whose plans are not in compliance with the Act.

The majority did not consider the administrative scheme adopted by the Commonwealth of Virginia sufficiently comprehensive to withdraw the private remedy of a lawsuit under the civil rights act. Virginia allows providers to dispute individual payments, but providers may not appeal the organization of peer groups, the use of the reimbursement rates established in the plan, the calcula-

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*After this article was submitted for publication the National Health Lawyers Association reported that Virginia acute-care hospitals accepted a $20 million settlement of their claim, to be paid by the state of Virginia over four years starting 1 July 1992. Federal matching money is expected to double the payments. *Health Lawyers News Report,* 19 (3):7 (March 1991).

tion of the initial group ceilings as of 1982, the use of the consumer price index, or the time limits set forth in the state plan. The majority also concluded that the secretary's limited oversight was insufficient to demonstrate a congressional intent to foreclose relief in the courts under the civil rights act.

The dissent, written by Chief Justice Rehnquist, and joined by Justices O'Connor, Scalia, and Kennedy, argued that the Boren Amendment is addressed to the states and merely establishes one of many conditions for receiving federal Medicaid funds, but does not clearly confer any substantive rights on providers of Medicaid services. The dissent argued that the only right enforceable under the civil rights act is the right to compel compliance with the procedural requirement that rates be accompanied by findings and assurances of reasonableness and adequacy. The majority said that this argument would render the statutory requirement of findings and assurances meaningless.

The dissent said that allowing hospitals to seek relief under the civil rights act would "require the States to adopt reimbursement rate systems different from those Congress expressly required them to adopt" by the language of the statute. This seems a specious argument, as Congress did not expressly require the states to adopt any specific reimbursement system, only a reasonable and adequate one. The dissent appeared to take offense at the implication that without judicial enforceability, the states could not be trusted to create rate systems that are reasonable and adequate, stating "...the Court's suggestion that the States would deliberately disregard the requirements of the statute ignores the Secretary's oversight incorporated into the statute and does less than justice to the States."

The Wilder decision is likely to engender a flood of lawsuits by Medicaid providers faced with increasing financial burdens due to the combination of a growing demand for Medicaid services by the elderly and indigent, the rapid inflation of health care costs, and government pressure to control costs by limiting Medicaid reimbursement rates. Inadequate reimbursement rates under Medicare and Medicaid are said to have contributed to many hospital closings.[10] Inner city hospitals are especially vulnerable because they serve many indigent patients, have higher costs and often cannot withdraw from the Medicaid program. Their only alternatives are to close or file for bankruptcy. Three hundred public hospitals have closed since 1985, with low Medicaid reimbursements a major factor, since Medicaid reimbursement must be accepted as full payment for services rendered to the indigent. Other hospitals have closed their obstetrical and emergency services to discourage Medicaid beneficiaries from seeking care.[11]

States contributed to the fiscal problems of hospitals with the stringent price-setting regulations they imposed in the 1970s to control health-care costs. The rules did not take into account the future impact of AIDS and the large number of patients without insurance. New York, New Jersey, and Connecticut have been forced to revise their hospital rates when many hospitals in those states found themselves facing financial crises.[12]

Medicaid comprises a substantial proportion of the states' annual expenditures, and Medicaid spending by the states increased more than 100% during the 1980s.[13] AIDS and drug addiction have contributed to the escalation in health-care costs. An increasing proportion of the costs of caring for AIDS patients has been borne by state Medicaid programs, as the share paid by Blue Cross, commercial insurers, and HMOs has been declining.[14] Escalating Medicaid costs are causing many states to cut other vital social programs.[15] The federal government has added to Medicaid costs by mandating new programs: the Budget Reconciliation Act passed by Congress in October 1990 called for coverage of all poor children through the age of 18 by the year 2001, thereby adding several million children to the Medicaid rolls.

States have resorted to different methods in attempting to cope with the crisis in medical-care costs. In 1989, Massachusetts suspended reimbursement of payments to hospitals, nursing homes, and other Medicaid providers because of a severe budget squeeze. Medicaid was the largest single expenditure in the state budget, with Massachusetts offering the broadest Medicaid coverage in the nation.[16]

Oregon was the first state to propose rationing of health-care services under Medicaid in order to cut costs and at the same time provide broader access to care. A 1989 statute authorizes the state to rank medical services along a cost/benefit continuum and fund under Medicaid only those whose ratio is below some arbitrarily determined number, except that all procedures will be covered for the aged, disabled, and blind. The state intends to give priority to preventive care. In May 1990, the Oregon Health Services Commission made public a list of 1,600 medical procedures, ranked according to a formula balancing cost vs benefit.[17] The ranking of procedures has stirred sharp debate, with much disagreement about the methods used to weigh the benefits and costs of various procedures.[18] Unless the federal government grants the state a Medicaid demonstration waiver, Oregon cannot implement such a program without losing the federal contribution to its Medicaid program.[19] Several other states are reported to be considering a similar approach to curbing Medicaid costs.[20]

At the same time that some states are considering rationing in order to curb their Medicaid costs, others are being sued by providers attempting to obtain increased Medicaid reimbursements. Even before the Wilder decision, hospitals and nursing homes in about a dozen states had filed similar suits. In January 1990 Federal District Judge John P. Fullam found Pennsylvania's Medicaid rates arbitrary, and ruled that all hospitals in the state were entitled to an increase of at least 13%.[21] The Rye, N.Y., Psychiatric Hospital Center is reportedly suing the New York State office of Mental Health and Department of Social Services, charging that the state violated the Boren Amendment by basing payments to psychiatric hospitals on occupancy without considering length of stay.[22]

The Connecticut Hospital Association (CHA) filed suit in federal district court on 21 December 1990, alleging that the State of Connecticut uses an outdated formula in calculating its Medicaid reimbursement rates: CHA had announced its intention to sue within days after the Wilder decision was announced,[23] but says it needed more time to collect data. The association claims that Connecticut hospitals provided $33 million more in services in fiscal 1989 than they were reimbursed by the Department of Income Maintenance, the state agency which administers the Medicaid program.[24] Connecticut, which faces a projected budget deficit of about $2 billion, could find it even harder to increase its Medicaid reimbursements if the formula used to distribute federal Medicaid funds is revised in accordance with a recent proposal made by the General Accounting Office, as the state would receive less money from the federal government under the new formula.[25]

Lawsuits by Medicaid providers against the states will divert some funds which could have been used on patient care to pay litigation expenses. States may, however, be motivated to be more generous in setting their Medicaid rates in order to forestall such litigation.[26] Rate increases obtained by litigation could significantly burden state finances, as Medicaid is typically the second biggest component of state budgets after education, accounting for 12% of state budgets on average, and considerably more in some states. Federal officials are also concerned about possible increases in Medicaid rates as a consequence of suits provoked by the Wilder decision, as the federal government pays for about 55% of all Medicaid costs.

The additional pressures on the states created by the Wilder decision can only add to the calls for reform of the American health-care system, which has been called "one of the most cumbersome, expensive and inequitable in the industrialized world."[27] The American Medical Association has called for major reforms in both Medicare and Medicaid.[28] It recommended setting national standards for Medicaid, decreasing the Medicaid eligibility level, and increasing reimbursement to health-care providers.[29]

The federal government, which spent about $60 billion on Medicaid in 1989 and is itself operating under a huge deficit, appears to be moving in the opposite direction: legislating cuts in Medicaid financing while simultaneously mandating increased coverage of the nation's poor.[30] Some of the costs of the expanded coverage may, however, be offset by a new prescription drug purchasing plan to take effect in January 1991.

Business and private insurers have, for their own reasons, allied with hospitals in their attempts to seek higher Medicaid reimbursement rates. Hospitals try to compensate for the Medicaid shortfall by charging higher fees to patients with private insurance, the cost of which falls on insurance companies or businesses that provide health insurance for their employees. Private insurers also fear that lack of coverage for many of the nation's poor will ultimately lead to the adoption of a national health insurance program, which is not in their interest.[31]

While there seems to be widespread agreement that the current health-care system needs reform, there is little agreement on what should replace it.[32] The Wilder decision can be expected to accelerate demands for change, but it gives little indication of the direction that change will take.

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Fundamental Elements of the Patient-Physician Relationship

The following report of the Council on Ethical and Judicial Affairs was adopted by the AMA House of Delegates on 6/6/90.

From ancient times, physicians have recognized that the health and well-being of patients depends on a collaborative effort between physician and patient. Patients share with physicians the responsibility for their own health care. The patient-physician relationship is of greatest benefit to patients when they bring medical problems to the attention of their physicians in a timely fashion, provide information about their medical condition to the best of their ability, and work with their physicians in a mutually respectful alliance. Physicians can best contribute to this alliance by serving as their patients' advocate and by fostering the following rights:

1. The patient has the right to receive information from physicians and to discuss the benefits, risks, and costs of appropriate treatment alternatives. patients should receive guidance from their physicians as to the optimal course of action. Patients are also entitled to obtain copies or summaries of their medical records, to have their questions answered, to be advised of potential conflicts of interest that their physicians might have, and to receive independent professional opinions.
2. The patient has the right to make decisions regarding the health care that is recommended by his or her physician. Accordingly, patients may accept or refuse any recommended medical treatment.
3. The patient has the right to courtesy, respect, dignity, responsiveness, and timely attention to his or her needs.
4. The patient has the right to confidentiality. The physician should not reveal confidential communications or information without the consent of the patients, unless provided for by law or by the need to protect the welfare of the individual or the public interest.
5. The patient has the right to continuity of health care. The physician has an obligation to cooperate in the coordination of medically indicated care with other health care providers treating the patient. The physician may not discontinue treatment of a patient as long as further treatment is medically indicated, without giving the patient sufficient opportunity to make alternative arrangements for care.
6. The patient has a basic right to have available adequate health care. Physicians, along with the rest of society, should continue to work toward this goal. Fulfillment of this right is dependent on society providing resources so that no patient is deprived of necessary care because of an inability to pay for care. Physicians should continue their traditional assumption of a part of the responsibility for the medical care of those who cannot afford essential health care.

Medical Diagnostic Ultrasound Instrumentation and Clinical Interpretation

Report of the Ultrasonography Task Force

AMA COUNCIL ON SCIENTIFIC AFFAIRS

Over the past 20 years, there has been a dramatic increase in the use of ultrasonography as an imaging modality. The introduction of real-time ultrasonography and Doppler units for the measurement of blood flow in the 1970s, recent advances in transducer design, signal processing, and miniaturization of electronics, along with the lack of radiation exposure, have been primarily responsible for the increased use of ultrasound. However, although ultrasonography can provide diagnostic information safely and easily, interpretation of the information requires an understanding of the physics behind ultrasound, how that physics is translated into ultrasound instrumentation, recognition of artifacts that are associated with the various types of ultrasonography, and identification of these artifacts in specific anatomic locations.

IMPROVEMENTS in ultrasonographic instrumentation, including advances in transducer design, miniaturization of electronics, computer-based signal processing, and microprocessor-driven electronics, have contributed to a dramatic increase in the clinical use of ultrasound in recent years. New sonographic devices provide patient information with improved quality, safety, and ease. However, interpretative skills and training must still be emphasized so that the technology can be appropriately used and the results accurately interpreted and applied to patient treatment decisions.[1] The successful interpretation of an ultrasound examination requires an understanding of the unique nature of ultrasound information, the appropriate techniques necessary to ensure its satisfactory production, and the characteristics of normal and abnormal anatomy and physiology necessary to establish diagnosis. The operator must monitor the quality of imaging data and differentiate clinically important findings from artifacts.

The applications of medical sonography are too diverse to permit a comprehensive review in this report. This article focuses on current ultrasound instrumentation and the major elements of information used in image interpretation.

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This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all the facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the scientific literature as of March 1990.

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Instrumentation

The production of an ultrasound image presents three separate challenges: generation of an ultrasound beam, detection of the returning echo, and processing of the signal for display. Equipment for image production must address each of these.

In most ultrasound units, the transducer is used both to generate the ultrasound beam and to detect the returning echo. The sensitive element in the transducer is a small crystal or ceramic component that vibrates in response to an applied voltage and, in turn, converts the returning echoes into an electrical signal.

In echo-ranging imaging systems, the transducer pauses after transmitting a pulse of ultrasound energy to "listen" for returning echoes. An ultrasound pulse normally occupies about 1 microsecond, and the corresponding "listening" time is 0.25 millisecond or less. The maximum number of pulses per second, termed the *pulse repetition frequency,* is inversely related to the depth of tissue to be sampled. Once an echo has been received and converted to an electronic signal, it is amplified and processed for display. Different display techniques are designed to emphasize one or more aspects of the ultrasound signal that may reveal interesting properties of tissue.

M-mode Ultrasonography

M-mode ultrasonography displays changes in position of reflective structures over time. The intensity of the reflected signal is indicated by the brightness of the display. M-mode is interpreted by assessing characteristic motion patterns of specific structures and by determining anatomic relationships from these characteristic patterns of motion. M-mode ultrasonography was the first means of visualizing intracardiac anatomy for diagnosis of pericaridal effusion, cardiac tumors, and asymmetric septal hypertrophy. The major current application of M-mode display is evaluation of the rapid motion of cardiac structures, including valves and chamber wall, and the effects of pathological conditions on the excursion of these structures. Major shortcomings of M-mode display include limitations of the field of view to the profile of the ultrasound beam and an inability to show the shape or anatomy of cardiac structures. Thus, the sites for M-mode examination are limited to areas where useful anatomic landmarks can be indentified. The introduction of two-dimensional (2-D) echocardiography has addressed some of these limitations.

The view of cardiac anatomy provided by this method, although dynamic, has been compared with that obtained by examination of a darkened area with the narrow beam of a flashlight.[2] Only a small area of the heart can be interrogated at a time, and the examiner is left with the task of mentally assembling the information into a composite view of the structures of interest. This results in an important limitation in evaluation of cardiac structures with complex three-dimensional motion.

B-mode, 2-D, and Real-time Ultrasonography

Real-time 2-D B-mode ultrasonography is now the most common form of B-mode display and can assess both anatomy and motion. To produce the impression of motion, a rapid series of individual 2-D B-mode images is generated by sweeping the ultrasound beam through a region of interest using either mechanical or electronic means in a repetitive automated fashion. Real-time systems can be categorized as either mechanical or electronic or, in the case of some annular array systems, a combination of both.

Mechanical real-time units employ one or more transducers attached to a stepping motor that moves the transducer automatically to new orientations so that information can be collected from multiple scan lines. There the units are small and can be used in constrained areas such as the intercostal space that serves as an "anatomic window" for cardiac imaging.

When electronic rather than mechanical means are used to sweep the ultrasound beam through the region of interest, high-quality images with high frame rates can be produced. One of the major advantages of electronic real-time scanners is their compatibility with other ultrasound modes such as Doppler, duplex, and color-flow ultrasonography.

Clinical Applications

2-D Echocardiography

In cardiac applications, the term *2-D echocardiography* or *2-D echo* is used to describe real-time B-mode imaging, while in most other applications the term *real-time ultrasonography* is used. Unlike M-mode, 2-D ultrasonography allows for the identification of the anatomy of structures with resolution of motion in two planes rather than one. The interpretation of 2-D real-time requires an understanding of the anatomy of the structures being examined and their normal patterns of motion coupled with a solid knowledge of examination techniques, artifacts, and instrumentation. In cardiac applications, 2-D echo transducers are generally larger than those used for M-mode examination; this poses problems in optimal placement of the transducers for imaging. Also, 2-D echo imposes significant restrictions on the sampling rate compared with M-mode. Whereas sampling rates in M-mode are typically in the range of 1000 samples per second, 2-D frame rates are limited to 30 to 60 images per second. Thus, for accurate evaluation of the motion of cardiac structures with high velocities, M-mode rather than 2-D may be required. In noncardiac applications, temporal resolution is less likely to pose problems with current instruments.

Although the important diagnostic criteria for interpretation of B-mode images will vary with the application, some general criteria apply. The tomographic information provided with ultrasonography and its ability to generate images in any plane and to perform dynamic real-time examinations make the determination of the size and shape of solid organs relatively easy, except in the presence of superimposed gas or bone. Blood produces few echoes, this permits visualization of vascular structures without the use of contrast materials. Vascular landmarks aid in the identification of normal anatomy and can be evaluated for primary and secondary abnormalities, including aneurysm, thrombosis, and encasement. Identification of normal and abnormal patterns of tissue contrast is a key element of interpretation. For example, tissue textures in organs such as the liver, spleen, uterus, and placenta are well evaluated by ultrasonography. Finally, characteristic ultrasound patterns permit evaluation of the presence of fluid, gas, and calcification.

Endosonography

Miniaturization of electronics and refinement of real-time ultrasound transducers have led to the development of endosonography. Endosonographic transducers (eg, transrectal, transvaginal, transurethral, and transesophageal) are mounted on probes for insertion into body openings such as the rectum, vagina, urethra, and esophagus.[3,4] Special transesophageal transducers have been developed for cardiac examinations.

The miniaturization of electronics and development of endosonographic transducers are precursors to a completely new type of transducer. Extremely small ultrasound probes can now be attached to the end of 5F to 8F catheters and inserted directly into blood vessels to provide information about the entire thickness of the vessel.

Intraoperative imaging, particularly for the brain, liver, pancreas, and gallbladder, produces extremely detailed images, and precision puncture biopsies can be performed with specialized transducers.

Doppler and Duplex Ultrasonography

In contrast to A-mode, M-mode, and B-mode gray-scale ultrasonography, which display the interfaces from tissue interfaces, Doppler ultrasound instruments are optimized to display flow information that is not well visualized with other imaging techniques.

Doppler ultrasonography depends on the Doppler effect, which describes a shift in frequency of echoes returning from an object moving in relation to the echo source, ie, the transducer. The difference between transmitted and received frequency is the Doppler shift. The Doppler frequency shift is directly related to two key parameters: the velocity of a moving interface and the angle between the blood flow and the direction of Doppler insonification. This angle is also known as angle ϑ or the Doppler angle. The accuracy of a velocity estimate obtained with Doppler ultrasonography is only as great as the accuracy of the measurement of the Doppler angle. In general, the Doppler angle is best kept at 60° or less as small changes in the Doppler angle above 60° result in significant changes in the calculated velocity from the ultrasound transducer.

Doppler shifts are in the audible range of sound. A display of the detected frequency changes is called Doppler spectrum. Early Doppler units could detect only the presence of motion, but newer units can also indicate the direction of motion and quantify the velocity of the moving interface. Two general types of Doppler instrumentation are available: continuous and pulsed wave.

Continuous-wave Doppler units use two piezoelectric elements in the transducer assembly, one to transmit sound waves continuously and the other to receive reflected echoes continuously. If the sound beam strikes a moving interface, the frequency of the reflected sound will be higher (interface moving toward the transducer) or lower (interface moving away from the transducer) than the transmitted frequency. By measuring the Doppler shift and estimating the angle of incidence (usually from an ultrasound image), the velocity and direction (forward or reverse) of the moving interface can be calculated. Continuous-wave Doppler units provide no depth information; therefore, if several vessels are present on the sensitive volume, the continuous-wave device cannot discriminate the signals of one vessel from another.

Because of these limitations, most diagnostic applications employ range-gated pulsed Doppler ultrasound in order to obtain depth information. In a pulsed-wave Doppler unit, the transducer is momentarily stimulated to produce a short burst of ultrasound, then remains quiescient in order to detect returning echoes. Received echoes are "gated" so that only those corresponding to a specific depth in tissue are used to produce the Doppler signal.

The detection of a Doppler frequency shift indicates the presence of flow, and the sign of the shift (positive or negative) indicates the direction of flow relative to the transducer. Vessel stenosis is typically associated with increased frequency shifts in systole and diastole at the site of greatest narrowing and with turbulent flow in poststenotic regions. Analysis of the Doppler changes allows accurate prediction of the degree of vessel narrowing. Finally, the changes of blood velocity with time provides, among other things, information related to the resistance of flow of the distal vascular tree. Doppler indexes, such as the systolic to diastolic ratio, resistive index, and pulsatility index, which compare the flow in systole and diastole, are used as an aid in the evaluation of perfusion of renal transplants, the placenta, and uterus.

Doppler systems can be combined with 2-D real-time B-mode imaging systems, producing duplex scanners. B-mode imaging permits evaluation of the vessel wall and plaque and guides placement of the Doppler sample volume. The Doppler system is used to evaluate frequency or velocity changes associated with normal and abnormal blood flow.

However, the design considerations for real-time imaging and those for Doppler measurement often conflict and may make simultaneous display of Doppler and imaging data difficult. Flow data are obtained only from a small portion of the area being imaged; therefore, accurate measurements depend on the precise positioning of the Doppler sample volume. A sampling problem may arise in cases where flow disturbances are isolated in small areas. Failure to sample such regions may miss or underestimate localized areas of severely disturbed flow. The complexity of the Doppler data, coupled with the need for accurate sampling and the compromises in instrumentation necessary to permit duplex imaging, make duplex ultrasonography a demanding examination.

Doppler Color-Flow Imaging (DCFI)

Fortunately, many of these problems may be resolved with recently introduced DCFI devices in which Doppler-derived flow information is displayed as a feature of the image itself. This method combines 2-D gray-scale imaging with color-coded Doppler flow analysis in real time and permits real-time viewing of flow superimposed on anatomic structures throughout the entire field of view. Signals from red blood cells are displayed in color as a function of their motion, and the degree of the saturation of the color is used to indicate the relative velocity of the moving red blood cells. These systems also provide range-gated pulsed Doppler ultrasound with spectral analysis for display of conventional Doppler data.

Real-time color-flow mapping devices were first developed and used for cardiac applications.[5-11] This cardiac instrumentation has been described in the literature by a variety of terms, including *color-coded Doppler, Doppler angiography, 2-D Doppler, Doppler color-flow mapping*, and *DCFI*. The latter term will be used in this article, although it is important to note that color systems do not actually measure flow, but rather they simply detect and display changes in the Doppler frequency shift related to flow.

By using color saturation to display variations in Doppler shift frequency, DCFI allows a semiquantitative estimate of flow to be made from the image alone. The color display of flow throughout the image field allows continual evaluation of the position and orientation of the vessel. The display of spatial information with respect to velocity is ideal for presentation of small localized areas of turbulence, providing clues to stenosis or irregularity of the vessel wall caused by atheroma, trauma, or other disease. Limitations of DCFI include inability to display the entire Doppler spectrum in the image, limited sensitivity of some instruments, artifacts due to high amplitude, and low-frequency targets and phase shifts due to gas.

General Artifacts

Artifacts have been described most extensively with respect to B-mode and Doppler systems. Many artifacts are induced by errors in scanning technique instrument setup or positioning of the transducer and thus are preventable.

In any interpretative specialty, accurate diagnosis relies on knowledge of the normal patterns of the structures under evaluation and the types of changes likely to occur with disease. A lack of knowledge can have serious consequences, eg, the simulation of a serious neural tube defect by normal fetal hair.[12] Likewise, confusion of normal structures with abnormalities may also have serious impact. Potential sources of error include confusion of the urinary bladder with an abnormal cystic pelvic mass or misinterpretation of urine refluxed into the vagina, bladder diverticula, or mobile pelvic masses displaced by the bladder.[13] The interpretation of ultrasound data involves special care and training because of the unique information provided in the ultrasound image—information that is not comparable in content and display with that provided by other imaging methods, including radiography, computed tomography, magnetic resonance, and radionuclide.[14]

Therefore, a review of the most important artifacts is appropriate. In general, artifacts that alter ultrasound interpretation may be classified as follows: (1) artifacts that suggest the presence of structures not actually present; (2) artifacts that remove real echoes from the display or obscure information; and (3) artifacts that distort the size, shape, or brightness of a structure (displacement of echoes on the display from their proper location).

Artifacts That Suggest the Presence of Structures Not Actually Present

Artifacts that suggest the presence of structures not actually present result in the display of nonstructural echoes, including reverberation, refraction, side lobes, and speckle. Reverberation artifacts arise when the ultrasound signal reflects repeatedly between highly reflective interfaces, usually, but not always, near the transducer. This results in a series of equally spaced false echoes distal to the real reflectors. This artifact can obscure important image features and introduce irrelevant echoes. For example, high-intensity reverberation artifacts commonly occur in fetal cranial examinations and may mimic an abnormal fluid collection.[15] The echoes resulting from the reverberations may give the false impression of solid structures in areas where only fluid is present, such as in the cerebral ventricles of a fetus in utero or in a superficially located gallbladder. Certain types of reverberation, such as the so-called comet-tail artifact (a dense tapering tail of echoes just distal to a strongly reflecting structure), may be helpful by allowing the identification of a specific type of reflector, such as a surgical clip.[16] Reverberation artifacts can often be reduced or eliminated by changing the scanning angle or transducer placement.

Refraction causes bending of the sound beam so that targets that are not along the axis of the transducer are displayed in the image. This may cause the appearance of structures that may actually lie outside the volume that the investigator assumes is being examined.

For example, refractive artifacts may create the appearance of hepatic pseudotumors in patients with ascites.[17] Here the nodular liver surface surrounded by ascites causes a focal concave area to transmit sound. The result is an area of increased echogenicity caused by decreased attenuation that is demarcated from adjacent liver tissue. Changing the transducer angle and position can eliminate this artifact. Artifacts arising from the transmission of sound through rib cartilage may suggest protuberance of the surface of the liver, which may be confused with a tumor.[18] This artifact, caused by the convex shape of rib cartilage, should be easily recognized if one is familiar with the basic principles involved.

Side lobes consist of sound beams that lie outside of the main ultrasound beam. Even though the structures insonated by side lobes lie outside of the main beam, the resulting echoes may be displayed in the image as artifactual specular or diffuse reflectors. Side-lobe artifacts from specular reflectors tend to occur near curved, highly reflective surfaces, such as the diaphragm, or near large cystic masses, such as the urinary bladder or gallbladder. Diffuse artifacts may originate from bowel gas adjacent to cystic structures.[19] Side-lobe artifacts may create the impression of particulate debris in fluid-filled structures, such as the gallbladder, urinary bladder, and cysts. Side lobes may also result in errors of measurement by reducing lateral resolution.

Speckle artifacts refer to the apparent tissue textures seen near the transducer and artifactually suggest the presence of structures. Speckle is formed by a phase-sensitive process in which the interference of echoes arriving at the transducer at the same time produces an image pattern that resembles tissue. This may be a subtle and deceptive artifact, making the superficial texture of organs such as the liver appear normal when, in fact, an abnormality is present. Repositioning the transducer to position superficial areas in the focal zone can reduce the effects of this artifact.

Artifacts That Remove Real Echoes From the Display or Obscure Information

If an interface is present but not displayed in the image, important pathologic features may be missed. Shadowing results from a marked reduction in the intensity of ultrasound deep to a strong reflector or attenuator, such as bone and organs, and is easily recognized.

Improper time-gain compensation, a method used to compensate for the attenuation of the sound beam associated with increasing depth, may inadequately amplify echoes of clinical importance. For example, excessive time-gain compensation may produce echoes within normally echo-free spaces, simulating the presence of intracardiac masses. Since many low-level echoes are near the noise levels of the equipment, skill and experience is needed to balance maximum information with minimum noise. In the future, automated methods to assist the examiner may be helpful.[20]

Critical angle effects arise when the ultrasound beam is directed at a shallow angle onto large planar surfaces, which behave like mirrors. Interfaces of this type may not be detected if the angle of incidence of the transmitted ultrasound beam is less than a critical value. In this case, the sound will be reflected but in a direction that prevents detection. These interfaces are readily detected by adjusting the scanning angle so that the interface lies nearly perpendicular to the direction of the sound beam.

Inadequate penetration and resolution may also result in the loss of significant information. A general rule in ultrasound imaging is to select the highest transducer frequency (and thus ensure the best axial resolution) consistent with the depth of penetration needed. Improper selection of transducer frequency, as well as a lack of attention to the focal characteristics of the beam, may result in failure to display deep, low amplitude reflectors or failure to resolve small targets.

Artifacts That Distort the Size, Shape, Position, or Brightness of a Structure

Distortions in the size, shape, position, and brightness of structures not only impair the accurate description of lesions but also may impair accurate localization in biopsy or aspiration procedures. Multipath artifacts arise when the sound beam is reflected from more than one interface, not along the axis (line of sight) of the beam, before returning to the transducer. Thus, the echo is improperly located. For example, tissues within an organ that have varying velocities of sound propagation cause distorting refraction of the ultrasound beam. Inaccurate positioning of the reflecting surface and inaccurate display of the amplitude of the reflected sound may result.

Acoustical lenses may be formed by anatomic structures with curved surfaces, producing a variety of acoustical distortions.[21] These artifacts may produce duplicate or disrupted images of structures, such as the diaphragm, gallbladder wall, and posterior wall of the left ventricle. In the uterus, a double image of an intrauterine gestational sac or contraceptive device may result. These artifacts may occur in regions distal to a structure of circular cross section with an internal sonic propagation velocity lower than that of its surroundings.[22] As an example, transverse ultrasound scans of the pelvis may demonstrate double images or an apparent widening of the structures deep to the bladder because of refraction by the rectus muscle when the real-time transducer is placed on the midline of the abdominal wall.[23] The widening effect of split image is caused by refraction of sound at the interface between the abdominal wall muscle and the collection of fat deep to the muscle.[24] Image duplication or even triplication may result in errors of diagnosis and measurement.

Enhancement results in areas distal to structures with relatively low attenuation compared with adjacent areas. A typical example is the increased intensity seen deep to a cyst or other homogeneous mass. The strong signal should not be mistaken for a tissue abnormality and actually may aid in the characterization of the mass. Shadowing is the opposite of enhancement and is seen distal to structures with relatively high attenuation. The typical example is the shadow cast by gallstones. Shadowing can also aid in diagnosis, eg, distinguishing a gallbladder polyp from a gallstone.

Spatial resolution determines the ability of ultrasonography to differentiate small structures and is related to the transmitted pulse length and beam profile. Improper selection of scanning frequency or transducer focus may result in two adjacent structures being visualized as a single object. Propagation speed errors occur when the actual velocity of sound in a tissue or medium differs significantly from the value assumed in the ultrasound instrument (1540 m/s). A typical example is the relatively slow (1440 m/s) rate of sound propagation in fat, resulting in a longer transit time for the ultrasound signal. This longer time is interpreted by the instrument as indicating a more distant target and results in improper placement of the target in the image.

Doppler Artifacts

In Doppler examinations, the moving red blood cells act as point scatterers of ultrasound rather than specular reflectors. This interaction results in the intensity of the scattered sound varying in proportion to the fourth power of the frequency.[25] This has important implications with respect to the selection of the Doppler frequency to be used for a given examination. As the transducer frequency increases, Doppler sensitivity improves, but attenuation by tissue also increases, resulting in diminished penetration. Careful balancing of the requirements for sensitivity and penetration are an important responsibility of the operator during a Doppler examination.

Doppler instruments detect motion not only from blood flow but from adjacent structures. To eliminate these low-frequency signals from the display, most instruments employ high-pass filters or "wall" filters, which remove signals falling below a given frequency limit. However, these filters may also remove signals from low-velocity blood flow. In certain clinical situations, the measurement of these slower flow velocities is of clinical importance, such as in the calculation of Doppler indexes (the systolic or diastolic ratio or resistive index).

Aliasing is an artifact arising from ambiguity in the measurement of high Doppler frequency shifts. In order to ensure that samples originate only from a selected depth when using a pulsed Doppler system, it is necessary to wait for the echo from the area of interest before transmitting the next pulse. This limits the rate with which pulses can be generated, which in turn imposes limitations on the maximum Doppler shift frequency that can be measured at a given depth. Velocities that result in frequencies in excess of this value (the Nyquist limit) result in aliasing. Since many stenotic vessels have flow velocities that are above the levels capable of being detected with conventional pulsed Doppler ultrasound, the recognition of the aliasing artifact is important if accurate frequency or velocity measurements are to be obtained.

Comment

Ultrasonography is a powerful diagnostic tool with a broad range of uses that have clearly contributed to improved patient care. Compared with other imaging methods, the information provided by ultrasonography is unique and in many cases is difficult to duplicate as safely, inexpensively, or as easily. As the capabilities of new instrumentation have grown, so have the demands on the professionals who perform and interpret ultrasound examinations. Complex methods such as Doppler sonography and color-flow imaging have introduced new problems in maintaining quality of image production and interpretation. A less than optimal examination may result from misdiagnosis or from failure to use all of the information that ultrasonography provides.

As has been emphasized, the interpretation of ultrasound must begin with a solid understanding of the physical and technical principles involved. These principles must be applied in the acquisition of the image information and in its interpretation. Knowledge of artifacts and pitfalls unique to ultrasonongraphy is a necessity. Finally, this mastery of the technology must be matched by clinical skills, relating the sonographic findings to the clinical problem under evaluation. The success of the medical profession in meeting these objectives will determine the ultimate benefit of ultrasonographic imaging.

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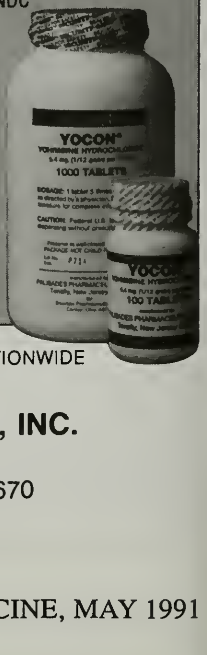

Colo-Rectal

E. TREMAIN BRADLEY, M.D.

DEFECATION is a natural function. It happens to most people nearly every day. How does it work? Watching a horse in this process—not too available these days—can be very instructive. No effort is made. Just the anus begins to flatten out and bulge and then dilate. As the bulky bolus of beaten-up oats and hay emerges, it is surrounded by mucous membrane which comes out with it, leaving a large red rosette after the stool has dropped. (The peristaltic wave has brought down the lining of the lower rectum along with the stool, reducing friction.) As the horse stands there, or continues to jog along, the rosette gradually shrinks and recedes, leaving the dark skin being pulled together by the anal sphincter. The longitudinal muscles of the bowel have contracted and pulled things back inside. But there has been no "voluntary constriction" that might trap the mucosa outside—the very process which produces troublesome hemorrhoids in humans. So if a little straining is needed to wake up the bowel, it should be discontinued once the peristaltic wave begins. And when finished, the voluntary sphincter should not be held tight.

If some tissue seems to be left outside, gravity can help to drag it back inside, provided the sphincter stays relaxed, no intra-abdominal pressure is exerted, and the anus is elevated six to eight inches above the heart, as by bending way forward or assuming the *knee-chest position*. The later involves getting one shoulder on the floor, or the bed, and having the thighs vertical (not "knees against the chest") so that the buttocks are as high as possible.

People with rectal complaints tend to hold the sphincter tightly closed. This produces spasm of the external (voluntary) sphincter and levator ani muscles. No problem with the internal sphincter which can remain contracted for long periods and still open up gradually when indicated.

Ablution: Even with proper training in relaxing the perineum, we cannot always follow precisely the equine example. Some soiling does occur at or around the anus at times during defecation, and this should be washed away, not just wiped with paper and rubbed in! George T. Pack, M.D., contributed an editorial in 1959 to *Diseases of the Colon and Rectum*, (Vol. 2, No. 4) entitled "In praise of the bidet." The bidet is ideal for this ablution but is not available to everyone. A good substitute is to wet one's fingers, get them soapy from a cake by the sink (or tub), then apply the moist soap around and to the anus. By backing up to and getting the buttocks over the edge of the sink (or tub), warm water running slowly from the faucet can be splashed repeatedly against the perianal region until all the soap has been rinsed away. Care should be taken to use the soft of the fingers and avoid any scratching by fingernails. A special "bidet towel" or wash rag should be available to dry the area so that clothing will not get wet. No more undressing is required for this than for sitting on the toilet.

Examination with the lubricated index finger will cause less reaction if approached gently. Once inside, the finger is rotated toward one side and flexed a little. Gradual downward pressure on the levator ani muscle (and subsequently repeated on the other side) will relax the whole perineum and permit more efficient and less uncomfortable examination, both digital and instrumental.

Rectovaginal examination in the female is of added value. My middle finger, which is in the rectum, measures a whole inch longer than my index finger, which is out of the way in the vagina. With gentle but firm pressure on the perineum that middle finger can thread its way up the colon, pulling some of it down and insinuating its way higher up. I have reached a carcinoma of the midsigmoid that way, which was readily resected from above with end-to-end anastamosis. This procedure can be done following a vaginal examination, or after a rectal examination, always using a fresh glove.

The debilitated bed patient tends not to expel feces easily, with the result that a sizable **impaction** may occur. The presence of this condition is often suggested by the seepage of a brown discharge from the anus. Removing an impaction can be quite disturbing and uncomfortable for the patient. Prior to breaking up the mass with a finger so that it can be removed piecemeal, the introduction of oil - such as a Fleet mineral oil enema - will help soften the stool and also act as lubricant when the finger and feces are extracted through the anus. If the mass is particularly hard or solid, a few ounces of peroxide introduced before the oil may aid in breaking up the mass.

Diverticulitis: When a barium enema has identified diverticula in the colon, the symptoms of diverticulitis often tend to ameliorate. Subsequent films show barium remaining for longer periods in some pockets. This inert substance is replacing, at least hindering, bacteria-laden fecal matter. Repeated, uncontrolled use of barium is not desirable, but what about other inert material? Flushing a bolus of mineral oil down - perhaps four ounces by mouth - may help fill some of these diverticula, as did the barium. Doing this every two or three weeks has helped some of my patients prevent their diverticulosis from blossoming back into diverticulitis. They should be warned, however, to stay near sanitary facilities for the next day as some of the oil tends to run through. Mineral oil is not too pleasant to swallow, but may be worth a few tries.

E. TREMAIN BRADLEY, M.D., solo practice of General Surgery, retired to Norfolk, CT.

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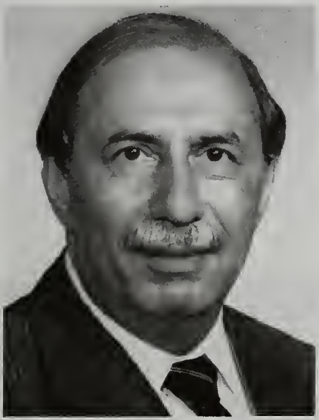
Smoking Cessation and CSMS



A Gallup poll has found that over two thirds of a sample of smokers claimed that they had never been urged to quit smoking by their physicians. And yet among those who have quit, a physician's advice ranks high on the motivating factors, with increasing evidence that a physician's advice to quit can boost quitting efforts and rates.

Cigarette smoking is actually the number one public health problem in the U.S., being the factor responsible for the most *preventable* deaths—a thousand premature deaths every day from smoking-related cancers, cardiovascular disease, emphysema, and even fires.

Although treatment priorities may require that a physician concentrate on immediate problems at hand, the practice of preventive medicine does become appropriate at some point in most courses of treatment. Good medical advice can be supplemented with supportive followup care. Physicians are often in a highly strategic position to reduce high-risk behavior and prevent future illness. Most smokers do wish they could quit.

Toward this end, the CSMS Committee on Public Affairs has recommended that CSMS co-sponsor a new National Cancer Institutes (NCI) program called "Training the Trainers" in our state. The Connecticut Division of the American Cancer Society has already trained thirty such trainers earlier this year. If the recommendation is approved, we will schedule workshops in all regions of the state, and present our members with effective methods for helping their smoking patients to quit, and for sharing this information with their peers, using NCI-developed materials.

Meanwhile, however, there is no need to postpone encouraging your patients to quit. Our 1991 Health Awareness packets contain one pamphlet in fire-engine red, entitled "Smoking...Public Enemy #1." You may order numbers of the packets for your waiting room, or you may order quantities of just that pamphlet alone, without cost. Moreover, they are all now available in Spanish, too, for your Hispanic patients. Just write or call CSMS: 865-0587 or 1-800-635-7740.

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REFLECTIONS ON MEDICINE

Osler and Marius the Epicurean

ROBERT U. MASSEY, M.D.

IN a number of his essays, William Osler refers to Walter Pater's *Marius the Epicurean*; it appears to have been a favorite for it was among the seven or eight books that he selected to be read from during his final illness in December 1919. His earlier references to it had to do either with the religious temperament of the young Marius or with Marius' visit to a temple of Aesculapius.

In his Ingersoll lecture in 1904, "Science and Immortality," he said

> On the question before us wide and far your hearts will range from those early days when matins and evensong, evensong and matins, sang the larger hope of humanity into your young souls. In certain of you the changes and chances of the years ahead will reduce this to a vague sense of eternal continuity, with which, as Walter Pater says, none of us wholly part.[1]

Earlier, in an article written for the January 1889 issue of the *Montreal Medical Journal* Osler"...inspired by an account of an ancient Greek hospital recently excavated at Athens...was led on to speak of the description in 'Marius the Epicurean' of the hospital in the Etrurian hills where Marius had sought relief and been visited by the great Galen."[2]

For years I have tried to find a copy of Pater's romantic biography—not with dogged persistence, but recalling it whenever I have been in a bookstore where titles like that can sometimes be found. *Marius* first appeared in 1885, the result of five or six years of concentrated effort by Pater who was then honorary dean of Brasenose College, Oxford. Only recently I acquired a copy temporarily through interlibrary loan, and now my search will become serious.

The visit by Marius, whom I take to be a young adolescent, "to a certain temple of Aesculapius, among the hills of Etruria, as was then usual in such cases, for the cure of some boyish sickness," is described in wonderful detail in Chapter III, "Change of Air." The religion of Aesculapius, mythic son of Apollo, had been borrowed from the Greeks and "had been naturalised in Rome in the old republican times, but had reached under the Antonines, the height of its popularity throughout the Roman world." The setting is therefore second century, during the reign of the emperor Antoninus Pius. Indeed among the "official ministers of the place" was a man whom young Marius saw "often in later days in Rome, the physician Galen, now about thirty years of age." Pater includes all the elements of temple medicine: the beautiful park-like setting of the place, its quiet, holy peacefulness, the sacred spring, the baths, the special diet, the use of herbs, the healing through dreams in which the god, or one of his priests, discourses with the patient, admonishing him to "be temperate in thy religious notions, in love, in wine, in all things, and of a peaceful heart with thy fellows," and finally the appearance of "the great sallow snake," which with the staff has become the symbol of medicine. He describes the image of the god himself on a pedestal hung with *ex voto* offerings testifying to the healings that had taken place here.[3]

These temples, in Greek, *Asklepieia*, extended through the ancient world, their chief centers being at Epidaurus, Cos, and Pergamum, and, according to Henry Sigerist, the cult probably began either at Tricca, near Cos, or at Epidaurus in the sixth century B.C.; some of the temples were still functioning in the sixth century A.D.[4]

Pater's romantic work comprises both pagan and Christian elements at the very time when the church and the best of paganism were competing for men's minds and souls. The religion of Aesculapius was already ancient when Christianity came out of the catacombs, "the minor peace of the church," Pater calls the second century, and during the next 200 years each seemed to incorporate identifiable elements of the other. And indeed, in medicine, physicians and their institutions have absorbed identifiable elements from the asclepiads and their temple medicine, from two of whom, Hippocrates and Galen, Cos and Pergamum, we stand in direct descent.

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William J. Curran and American Health Law

JOSEPH M. HEALEY, J.D.

WHEN a history of the development of American health law is finally written, it is likely that two events will be singled out as critical to the growth and maturing of health law scholarship and health law education in the United States. The appointments of Jay Katz, a physician, to the faculty of the Yale Law School and of William Curran, a lawyer, to the faculty of the Harvard Medical School reflected the changing face of health law during the second half of the twentieth century and the changing attitudes within the academic community about the value and significance of interdisciplinary research and teaching in law and medicine. Each has been a distinguished scholar, a prolific author, an extraordinary teacher, and a valuable role model to the countless physicians and lawyers attracted to careers in this most engaging intellectual area. Notice from Boston that Bill Curran is retiring from his position as the Frances Glessner Lee Professor of Legal Medicine at Harvard provides an opportunity to express gratitude to him for his many contributions to American health law.

My first encounter with Professor Curran came while a law student through his textbook, *Law, Medicine, and Forensic Science.*[1] This text in its many editions is perhaps his greatest contribution to health law scholarship. It was the first real text in modern health law. In it, he set forth an outline and an agenda for health law that affirmed its roots in traditional areas such as regulation of health practices, professionals, and facilities, forensic medicine, and malpractice, while including what were then the emerging areas of medico-moral issues (contraception, abortion, end-of-life decisions) and of international health law. What had been a fragmented collection of related topics came alive to that generation of students as an integrated body, united by such common themes as the state's authority to regulate, the health professional's privileges and rights to practice, and the patient-consumer's rights and duties within the health care system.

Professor Curran is best known to physicians and other readers of the *New England Journal of Medicine* as the author of over 150 articles dealing with legal issues in medicine, most of them as part of his regular feature, "Law-Medicine Notes." Through these articles, he became widely known for his ability to summarize and to analyze the major cases and controversies of this formative period of American health law. Approximately half of the articles have been collected in a recent volume.[2] The range of topics and issues reflects the degree of his involvement with, and the extent of his influence upon, the development of public policy in health care.

Perhaps the most significant of his achievements has been his influential career as teacher, mentor, and role model during his years at Boston University and at Harvard. For more than thirty years he has introduced students of medicine, law, and public health to the intriguing world of health law. He has guided their research and encouraged their careers. He counts among his distinguished students George Annas, the Utley Professor of Health Law at Boston University and leader of the second generation of academic health lawyers; Ken Wing, author of the major public health law textbook; and Marshall Kapp, national authority on legal rights of the older person. Professor Curran took great pride in the fact that Ralph Nader's research on automobile safety began as a project for his seminar at the Harvard Law School. As a measure of his influence, his students continue to occupy positions of responsibility and authority at every level of health policy in government, in business, and at academic centers around the world.

My own debts to Bill are enormous. From 1973-75, I worked with him as a Kennedy Fellow in medical Ethics. I learned how to teach by watching him teach. I learned how to use a classroom as a partner in teaching by watching how he used his position and location to engage, not to isolate students. I came to appreciate the beauty and the power of the Socratic method by watching him use it as a tool of discovery and not as an instrument of embarrassment. He gave me an opportunity to grow as a young professional and to discover that it was teaching that was and has remained my major career interest. Finally, he taught me that health lawyers could and should strive to be voices of reason at the intersection of two professions where reasonable discourse is often a scarce resource.

On the occasion of his retirement, his friends, colleagues, and admirers wish him all the best.

JOSEPH M. HEALEY, J.D., Associate Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

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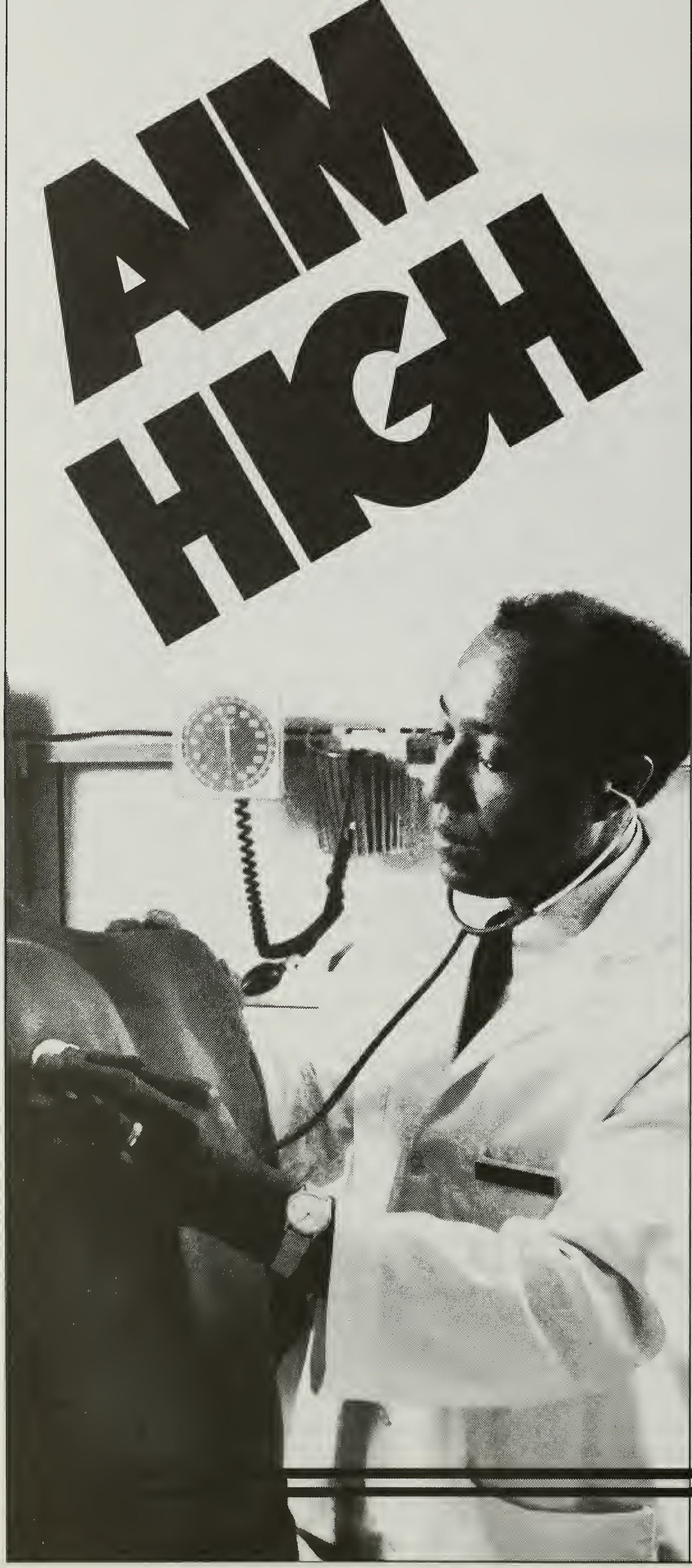

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AIR FORCE

The Month's Reading in Review

TIMOTHY B. NORBECK

- In purchasing multiple health insurance policies, an Arkansas man made a considerable profit from his hospital stays...Claiming back pain, depression, and anxiety, he spent about 100 days in hospitals between 1981 and 1984 - and collected $228,000 more than they billed...He bought policies that pay fixed daily sums (61 policies in 1983 alone paying daily benefits of $2,657) regardless of expenses.
- A legal loophole allows 165 U.S. House members elected before 1980 to pocket $41 million in campaign funds as long as they retire by 1993...Some 62 members have nest eggs of more than $250,000 each.
- The Bush administration is floating a proposal which would raise the Medicare Part B premium for beneficiaries making over $125,000 a year (about 600,000 seniors)...Such a proposal would triple premiums and raise about $426 million over five years..."It's not much in savings, but it's a very important principle", HCFA Administrator Gail R. Wilensky told reporters. "The issue is really one of fairness, and government resources ought to be focused on the neediest".
- An AMA commissioned survey by the Gallup Organization revealed that almost two-thirds of American adults (64%) think that cost is the main problem facing health care and medicine...Also that a majority of the public (60%) feels that upscale elderly patients should pay a percentage of their own health care costs, based on their income.
- The sincerity award of the month goes to U.S. Senator John Kerry of Massachusetts who sent the following letters to the same constituent nine days apart:

  > (Letter to Wallace Carter of Newton Centre, Massachusetts, dated January 22) "Thank you for contacting me to express your opposition... to the early use of military force by the U.S. against Iraq. I share your concerns. On January 11, I voted in favor of a resolution that would have insisted that economic sanctions be given more time to work and against a resolution giving the president the immediate authority to go to war".
  >
  > (Letter to Wallace Carter, January 31) "Thank you very much for contacting me to express your support for the actions of President Bush in response to the Iraqi invasion of Kuwait. From the outset of the Iraqi invasion, I have strongly and unequivocally supported President Bush's response to the crisis and the policy goals he has established with our military deployment in the Persian Gulf".

- Connecticut, where the median household income was more than $42,000 a year, again placed first in state income rankings...New Jersey was second with $39,012 and New Hampshire a surprising third at $37,500...Median household income in Mississippi was the lowest in the U.S.A. at $19,774...Connecticut ranked fourth in population density behind New Jersey, Rhode Island and Massachusetts... Connecticut was also first in per capita income at $25,358 (followed by New Jersey and Massachusetts).
- The lifetime cost of caring for an infant with low birth weight can reach $400,000, according to the National Commission to Prevent Infant Mortality.
- Violence in America statistics keep getting grimmer...Every 100 hours, more youths die on the streets in the U.S. than were killed in the Persian Gulf...A survey of Baltimore public-schools students showed that 59 percent of the males who came from one-parent or no-parent homes have carried a handgun...In a 1989 Chicago school survey, 39 percent of the children had seen a shooting.
- In a recent survey by the Employee Benefits Research Institute, 56 percent of the public characterized the nation's health care system as "fair" or "poor"...But 92 percent of those who said they have family physicians rated the care they receive as "excellent" or "good".
- A new study in the *Journal of School Health* indicates that children who consistently skip breakfast have

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TIMOTHY B. NORBECK, Executive Director of the Connecticut State Medical Society.

significantly higher blood cholesterol levels...The study analyzed breakfast habits of 530 students whose ideal cholesterol level was 140 to 150...Kids who regularly ate high-fiber cereals had the lowest levels, an average 149...Study author Ken Resnicow suggested that one reason why breakfast skippers have higher cholesterol may be that they "are less health-conscious and eating more fat during the day".

- According to *PARADE*, 58 percent of the U.S. population exercises less then three times per week...This secondary group is twice as likely to die from heart disease as those who work out more regularly.
- A Californian figured out a unique way to sting a San Francisco personal injury lawyer...The lawyer, Martin Jarvis, was having lunch at an Italian restaurant when he got an offer he couldn't refuse (according to the San Jose Mercury News)...A man who identified himself as Michael Gambino told the lawyer that his wife and son had recently been killed in an auto accident...It seems that an employee of General Electric had plowed into the family Mercedes and the air bag failed to inflate...Gambino told Jarvis that G.E. and Mercedes-Benz had offered him $1.2 million to settle...There would be a meeting at Lloyd's of London, but he didn't have an attorney or a thing to wear..."No problem", said attorney Jarvis, who shelled out $13,900 for a suit, tie, gold ring, bracelet, and Piaget watch so his client could negotiate in style...Gambino, of course, was never heard from again.

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BOOK REVIEWS

Out of Bedlam

Johnson, A.B., New York: Basic Books, Inc. 1990. $22.95

This is an extraordinary monograph covering the mental health nonsystem as exemplified by New York State in particular, as well as the history of so-called deinstitutionalization which didn't acquire this label until the 1970s, although the process had begun some 20 years earlier. The author's main thesis is that our nonsystem suffers from an irreconcilable split between mental health professionals who know their work, and policy-makers and bureaucrats who know their job. Historical accounts begin with the usual description of the asylums, emphasizing the arrogance and overconfidence of the asylum directors of last midcentury which led to the first State Lunacy Commission in New York, in 1873, charged with overseeing the superintendents. It was followed in the 1890s by the New York State Care Act, emulated by most states, which resulted in quadrupling the number of state hospital inmates as a result of emptying the poor houses.

She then turns to academic developments in this century, especially those sparked by Adolph Meyer whom she erroneously accuses of "hating State Hospitals." He not only had worked in several of them but also established liaison between the first academic psychiatry department at the John Hopkins University and at least two state hospitals where his residents had to serve several months. She is more on target criticizing The American Medical Association and The American Psychiatric Association, the successor of the Hospital Superintendents Association, for opposing reforms and improved living conditions, and possibly even treatment, exemplified by their efforts to suppress the Grimes Report in 1930. This critical and horrifying report, based on visits to 600 state hospitals, was replicated 15 years late by Deutsch, a journalist, in "The Shame of the States."

Disturbing in this only slightly flawed historical account, as well as in some other sections of the volume, is the rather snide tone in referring to past efforts or movements, like the mental hygiene movement, the establishment of university-connected "receiving hospitals" (which they were not), and the many efforts to render psychiatry less empirical and more scientific, some of them unquestionably pursued with more zeal than judgment. Psychiatry may be docked for lack of advocacy on behalf of the chronically ill, the chronically mentally ill, and for being relatively quiet about the atrocious conditions in many state hospitals, but psychiatrists also served and continue to serve in them in significant numbers, despite the public image of the analyst behind the couch.

Subsequent chapters are more factual and less tendentious, but in every instance whether snide or not, her statements are always documented or quoted. The book is full of data.

She emphasizes correctly that deinstitutionalization (which was advocated by Grimes in 1930) did not originate with the professionals but with the policy-makers and budget managers. This movement began with a realization, especially through the Governors' Conference of 1954 which was devoted to mental health, that many expenses could be shifted to other agencies besides their mental health departments, and that federal support for the down-and-out might be useable for the mentally down-and-out as well. This budgetary sleight of hand gained momentum in the 1960s with the arrival of Medicare and Medicaid so that the hospitals no longer had to be the caretakers of the infirm aged who were shifted to nursing homes where care was not only cheaper (and possibly even less humane) but also supported by Medicare and Medicaid. The nursing home population doubled between 1965 and 1970.

Likewise, the arrival of Social Security Insurance for the Disabled enabled the mental health departments to discharge an increasing number of younger patients into the community where their expense and care in many respects was carried by nonmental-health-department agencies.

All the same, professional efforts and programs to establish community care for the mentally ill and reduce hospital stays were running parallel with the bureaucratic shifts, emphasizing the desirability and advantages from the clinical standpoint of treating patients living in their own communities and with their families, if extant.

The author acknowledges that it is not lack of know-how, but lack of community resources and service integration which has created the depressing snake-pit atmosphere in the community, as evidenced by the homeless, many of whom also are mentally ill. (The estimates range from 12% to 40%.) Homelessness was abetted by the injudicious if not cruel federal housing policies during the last 10 years, including the destruction of many single-room hotels or other similar accommodations in run-down city neighborhoods. Furthermore, adequate community care has been hampered by the split between professional agencies and governmental or even private community agencies that fail to communicate, let alone interact effectively on behalf of patients. However, claiming that professionals, psychiatrists included, prefer sitting in their offices waiting for "clients" instead of working through outreach programs is a distortion; many community and mental health centers and other agencies do outreach work even though it is clearly insufficient and inadequate. (This reviewer did so as a resident in the 1940s.) Cogently, the author lays to rest the fallacious notion that "the mentally ill are now in jail," providing moving examples to support her view. Her original thesis of the incurable schism between administrators and policy-makers on the one hand, and the professional staffs on the other, is well-documented, but she offers and entertains no ready solution. Despite some of the flaws and inaccuracies, this is an outstanding account of the current mental health scene and situation, and how we got there. This book should be read by all of us who work in this field.

Stephen Fleck, M.D.

What's New in Medicine

L.A. Chotkowski, M.D., FACP Health Press, Santa Fe, NM 1990, 274 pages, $14.95

"More than 250 of the Biggest Health Issues of the Decade" is the somewhat grandiose but quite apt subtitle of this recent text by Dr. Chotkowski, a Connecticut native. Cast in lay language and set in the format of an abstract followed by a commentary, the author reviews briefly, accurately, and clearly many headline topics of the recent past. It is extraordinarily good. It sets lay misinterpretations right, separating fact from fiction in a concise fashion. Indeed it is a layman's textbook of medicine, well suited to a range that includes the underinformed from curious patients to news editors.

Those who knew the author and remember his insatiable curiosity will not be surprised by the breadth of topics covered. Fifteen chapters extend from issues of lifestyle, nutrition, fitness, drugs, and sex, to medical problems including infections, mental illness, cardiovascular diseases, cancer, diabetes, and osteoporosis, and to the broader issues of ethics, aging, and "general medical news." The abstracts are drawn from well-recognized medical journals, the New England Journal of Medicine being especially well represented, some less renowned journals, and a scattering of good lay press articles.

Each abstract and commentary occupies about a page and is headed by a descriptive title, some quite colorful: Two drinks a day; Living with germs; The leech returns. But do not take this text lightly. Dr. Chotkowski has selected topics that remain on the forefront in medical journals; he has defined the issues well, and his capacity for pithy expression is perfectly suited to this literary form. The section on cancer includes topics on interleukin-2, immune therapy, and retin-A1; the section on heart disease includes information on management of hypertension, congestive failure, and on prevention that represents a valuable review even for the current practitioner; and the General News section includes material on the risks and benefits of modern diagnostic technology that is as useful to the physician as to the patient.

I clearly remember this lean figure of a man, intent, fascinated but critical, at nearly every Connecticut meeting I have attended. I imagine him creating a file of the notes he made, collating them with articles from his many journals, and keeping his retirement promise to edit and publish the most important ones. Born and educated in Connecticut (Trinity, Yale), this practitioner of medicine, 25 years in office practice and added years in public health, school health, and as chief of medicine (Rocky Hill Home and Hospital and Connecticut Valley Hospital), has shown his inveterate qualities as a scholar!

I recommend this text with warmth and enthusiasm, especially to those curious and astute patients who have the need to keep abreast of the world of medicine to care for themselves. It would be quite appropriate to place it in the physician's waiting room. In any case, I suggest the physician read it first to avoid possible subsequent embarrassment.

James E.C. Walker, M.D.

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Ventilatory Support Alternatives to Tracheostomy and Intubation: Current Status of the Application of This Technology

JOHN R. BACH, M.D.

ABSTRACT—Intermittent positive pressure ventilation (IPPV) via tracheostomy has been the most common method of providing long-term ventilatory support since the late 1950s. Likewise, intubation for the delivery of IPPV is standard treatment for acute ventilatory failure. Because of poor patient acceptance of elective tracheostomy, numerous reports of complications by these invasive methods, and the recent development of noninvasive ventilatory assistance by intermittent positive airway pressure (NV-PAP), there has been increasing interest in all forms of noninvasive ventilatory support.

This report reviews the current application of noninvasive ventilatory support alternatives in both the acute and long-term settings. Assistive technology for the noninvasive evacuation of airway secretions, which facilitates up to 24-hour, long-term noninvasive ventilatory support is also discussed. We conclude that wider familiarity with and application of these techniques are warranted.

Historical Perspective

ARTIFICIAL ventilatory assistance was first used during attempts at resuscitation and included the employment of chimney bellows for ventilatory assistance via the mouth as early as the 16th century.[1] The use of electrical stimulation of the phrenic nerve by Caldani was reported in the latter 18th century.[2] The first successful attempt at long-term mechanical ventilatory support, however, was with the use of negative pressure body ventilators (BVs) and was described by the Scottish physician, John Dalziel in 1832.[3] Dalziel's BV was a tank which enclosed the patient's body with his head protruding to the exterior past an airtight seal at the neck. Negative pressure was cyclically created in the tank by manually operating a pair of bellows in much the same way that a motor operates an iron lung. The cyclical creation of negative pressure in the tank and the resulting negative intrapleural pressure generated airway flow to ventilate the patient's lungs. Successful use of similar devices including the cuirass style ventilators, which work on the same principle as the tank ventilators but cover only parts of the thorax and abdomen, was described only a few years later.[4,5] The iron lung with bellows operated by an electric motor was perfected by Drinker and Shaw in 1928[5] and became the basis for the Emerson iron lungs, the devices used for 24-hour long-term ventilatory support until 1952. These iron lungs, and cuirass style BVs including the negative pressure wrap ventilators[6,7] and rocking beds[6,8] were widely used to support the ventilation of acute poliomyelitis patients and patients with other paralytic and restrictive pulmonary conditions until the late 1950s. They continue to be manufactured and used by many such patients today. Except for the cuirass ventilator, all other BVs require that the patient lie fully reclined. The cuirass itself can be used in the sitting position but it is cumbersome, maintaining an effective seal is difficult, and it is often not very effective particularly for the patient with significant scoliosis.

Tracheostomy for assisting ventilation was first introduced in 1869.[9] The use of transoral intubation was described soon afterwards.[10] These techniques were used for ventilatory support during surgical anesthesia until 1952, arid tracheostomies were not infrequently placed for the long-term management of airway secretions in patients ventilated by BVs in the 1940s. During the Danish poliomyelitis epidemic in 1952, a shortage of BVs necessitated

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Reprint requests to: Department of Rehabilitation Medicine, University Hospital B-239, The New Jersey Medical School - UMDNJ, 150 Bergen St., Newark, N.J. 07103. (Dr. Bach)

the use of tracheostomy tubes for long-term ventilatory support.[11] The convenience of tracheostomy for both ventilatory support and evacuation of airway secretions by comparison to BVs alone and techniques for manually assisted coughing[12] was soon appreciated by both physicians and patients. NV-PAP methods of ventilatory support[13-20] had not yet been reported and mechanical forced exsufflation devices for effective evacuation of airway secretions were not generally available.[21-24] Tracheostomy IPPV, therefore, became the standard for long-term ventilatory support in the late 1950s.

Complications of Invasive Methods of Ventilatory Support

Numerous reports have appeared of complications related to intubation, tracheostomy, and long-term tracheostomy IPPV.[25-34] These complications include airway colonization and increased risk of respiratory tract infection,[35-41] massive tracheal necrosis and hemorrhage,[41-46] tracheoesophageal fistulae,[47-48] tracheostenosis which has a 17-65% incidence,[33] laryngeal complications, swallowing problems and food aspiration,[49-50] cardiac arrhythmias,[52] and death from accidental disconnection despite alarms.[53-54] Chronic granulation tissue formation and painful tracheostomy tube changes are also common. Many patients develop mucus plugging with the risk of sudden respiratory arrest. This may be a chronic problem or may occur only during respiratory tract infections. Tracheostomy cuff mucus plugs may not be cleared by suctioning. Further, during most routine tracheobronchial suctioning attempts the catheter fails to enter the left main stem bronchus leading to an increased risk of left lower-lobe pneumonia.[55] The presence of a tracheostomy tube stimulates airway secretions, necessitating regular suctioning and routine toilet of the site, as well as regular changing of the tube and ventilator tubing. Supplemental humidification must be provided and attended to daily. Even with a deflated cuff speech is dependent on the cycling ventilator and is unsatisfactory. In addition to these difficulties, in many states a tracheostomy is considered to be an open wound. This may prevent the individual from community living, from attending many schools, and from many places of employment without prohibitively expensive nursing care.

Electrophrenic nerve pacing for assisted ventilation (EPP) is a management option for patients with chronic ventilatory insufficiency who do not have significant impairment of the phrenic nerves, lungs, or diaphragm. The main indications for EPP are respiratory paralysis after cervical or medullary injury above the origin of the phrenic nerve neurons, and chronic primary central hypoventilation.[56,57] The equipment is smaller and lighter than ventilators that are currently commercially available.

Disadvantages of EPP include the need for multiple neurosurgical procedures; total equipment and training expenses can exceed $200,000. Regular deep inspirations cannot be programmed nor tidal volumes easily modified. This limits speech and voice volume and can be a problem particularly during respiratory tract infections. There are no internal alarms. Further, upper airway collapse with EPP during sleep, and the not infrequent occurrence of sudden failure with little if any recourse to glossopharyngeal breathing (GPB), necessitate the ongoing presence of an indwelling tracheostomy. Voice quality is significantly poorer than for patients using noninvasive methods of ventilatory support. There may also be increased atelectasis from the paradoxical movement of the ipsilateral hemidiaphragm during unilateral EPP.

Operative trauma to the phrenic nerve is a serious problem since the nerve is easily damaged. Damage to the nerve may not be recognized until pacing is attempted 12 to 14 days later and may necessitate surgical reexploration. Another complication of the surgical procedure is infection at the site of the electrode or receiver. The internal components are foreign bodies and lead to an increased likelihood of infection over time. As with any implanted device, an associated infection usually necessitates removal of the unit.

Phrenic nerve and diaphragm conditioning may require the patient to be hospitalized for four to six additional months with much of that time spent in intensive care units. Besides phrenic nerve compression and infection, mortality from sudden failure, pathological changes in the phrenic nerves and diaphragm, and aspiration related to asynchrony of laryngeal reflexes during EPP are all long-term complications. Ventilatory failure may be sudden and without warning or it may be insidiously progressive. Equipment failure is the most commonly reported cause of EPP failure. In addition, since continued indwelling tracheostomy is usually necessary to maintain a patent airway during sleep with EPP as well as for IPPV when EPP fails, the complications associated with long-term tracheostomy must be added to those of EPP itself. A complete discussion of the advantages and disadvantages of EPP has been recently published.[58]

Noninvasive Methods of Ventilatory Support

Patients with paralyzed ventilatory musculature and no measurable vital capacity but who have reasonably intact oropharyngeal muscles can learn glossopharyngeal breathing (GPB) and use it to maintain normal blood gases throughout waking hours.[6,15,59] GPB is ideal as a ventilator back-up. It can also be used to take deep breaths to stretch the lungs and chest wall, to shout, and to enhance coughing. It is not possible in the presence of an open tracheostomy and is rarely effective with a plugged tracheostomy tube. It provides freedom from fear of accidental tracheostomy tube disconnection and can be an important advantage for avoiding tracheostomy.

There are two styles of noninvasive mechanical ventilatory support: body ventilators and NV-PAP. Body ventilators may be driven by negative pressure pumps (BVs), positive pressure such as the intermittent abdominal pressure ventilator (IAPV), or they may be operated without a pump driven mechanism, ie, the rocking bed. BVs include the tank and cuirass styles as previously described. They are practical only for nocturnal aid. The most effective BVs are the iron lung, Porta-Lung (Lifecare, Lafayette, Col.), and the negative pressure wrap ventilators. The cuirass is most convenient but least effective. It requires that the patient have good pulmonary compliance and minimal or no scoliosis. Although custom molded cuirass shells have been described, they have not been shown to be adequate for patients with little or no vital capacity.[60]

A body ventilator driven by a cycling positive pressure pump was first described by C.J. McSweeney in 1938.[61] The modern IAPV,[62] the Exsufflation belt (Lifecare Inc, Lafayette, Col.) or Pneumobelt (Puritan-Bennet Inc, Boulder, Col.) consists of an elastic inflatable bladder incorporated within an abdominal corset worn beneath the patient's outer clothing. Cyclical inflation by a positive pressure ventilator causes the bladder to compress the abdomen. The abdominal contents push the diaphragm upwards causing a forced exsufflation. With bladder deflation the abdominal contents and the diaphragm return to the resting position as the result of gravity. Inspiration thus occurs passively and the patient can actively add to this with tidal volume created by his own inspiratory effort. The IAPV is only effective in the sitting position. The average IAPV tidal volume boost has been reported to be 313 ± 107 mL.[62] This is not adequate for some patients with little or no vital capacity who have not mastered GPB. Most patients with significant scoliosis can also not be adequately assisted by IAPV.[62]

The term NV-PAP includes IPPV delivered via oral, nasal, or oral-nasal interfaces. IPPV delivered by a mouth piece was the first form of NV-PAP used to free postpoliomyelitis patients from their iron lungs in the early 1950s.[13] In the late 1950s it was observed that patients napped during the daytime without the mouth piece falling out of their mouths and their ventilation continued to be assisted.[7] By 1964 a number of patients had already switched from nocturnal BV use to up to 24-hour mouth IPPV.[14-16] Although the mouth piece was not often lost during sleep, periods of severe air leak lead to the use of the Bennett lip seal (Puritan-Bennett, Boulder, Col.) in 1969. The lip seal both fixed the mouth piece in the mouth and prevented excessive oral insufflation leak.

In 1984, as an alternative to daytime mouth IPPV for muscular dystrophy patients, DeLaubier first described the use of IPPV via a nasal interface.[63] Commercially available nasal continuous positive airway pressure (CPAP) masks were used to deliver IPPV. Nasal bridge pressure and insufflation leak into the eyes were common complaints of these patients. Success in overnight ventilatory assistance with nasal IPPV and in customizing nasal interfaces for IPPV, were first described in 1987.[64] Nasal IPPV has subsequently been shown to be useful for overnight ventilatory assistance for many patients including two with no measurable vital capacity.[18,19,65] Although some patients have minimal leakage out of the mouth during sleep because of passive movement of the soft palate against the tongue, leakage may occur to varying degrees for most patients throughout the night. Short periods of hypercapnia and severe oxyhemoglobin desaturation can occur, however, particularly in patients who do not maintain normal ventilation during daytime hours. If this occurs, the patient should be encouraged to switch to mouth IPPV with a Bennet lip seal and perhaps use cotton pledgets in the nostrils to prevent nasal leakage,[6] or switch to a custom oral-nasal interface.[20,66] They may also require daytime mouth IPPV or IAPV use to normalize their daytime blood gases. Custom molded nasal interfaces can now be obtained both commercially (SEFAM company, distributed by Lifecare, Lafayette, Col.) and individually.[19,66]

All three NV-PAP methods may be used for daytime as well as for nocturnal ventilatory support. Although the IAPV is the ventilator of choice for daytime support, it is not always effective, particularly in the presence of severe scoliosis, and is only preferred by patients with one hour or less of free time.[62] Daytime mouth IPPV is then indicated. Daytime nasal IPPV is useful only for patients who can not retain a mouth piece orally because of muscle weakness or inadequate jaw opening. It may also be used when patients do not have sufficient neck rotation to grab a mouth piece held near the mouth for daytime use.[6]

In general, noninvasive positive airway pressure aids should not be used and a tracheostomy must be considered when: oropharyngeal muscle strength is inadequate for controlling secretions and speaking; there is a strong history of substance abuse; the patient is obtunded or uncooperative; the patient has severe intrinsic lung disease with ongoing difficulties in managing respiratory tract secretions for which a mechanical exsufflation device (for mechanically assisted coughing) may be contraindicated or unavailable and access to effective assisted coughing is inadequate; there are uncontrolled seizures; or orthopedic conditions interfere with the use of noninvasive alternatives, ie, facial fractures.[67]

Mechanical Forced Exsufflation

Tracheal suctioning can be avoided by the use of effective manually assisted coughing[12] or the more efficacious mechanical forced exsufflation.[21-24] Greater than five liters per second of peak expiratory flow is required to generate effective expulsion of airway secretions.

Individuals with severe paralytic restrictive pulmonary syndromes may have less than one liter of peak expiratory flow. Clearance of airway secretions is further compromised by oropharyngeal muscle weakness. Airway suctioning via nose or mouth does not effectively mobilize deep secretions and is poorly tolerated. Chest percussion and postural drainage are commonly prescribed but are not in themselves adequate to clear the bronchial tree. Various techniques of manually assisted coughing are effective but underutilized.

A mechanical exsufflation device is effective and less effort-intensive than manually assisted coughing. Mechanical exsufflation devices were first described in 1953 and then studied extensively.[21-24] These devices deliver a deep, adjustable insufflation via an anesthesia mask or tracheostomy tube adapter; insufflation is followed by an independently adjustable exsufflation caused by a sudden drop in pressure of about 80 mm Hg in 0.02 seconds. The negative pressure is usually sustained for 1.5 to 2 seconds, and generates 5 to 11 liters per second of expiratory flow. This can be more than many physically intact individuals can generate and is optimal for clearing airway secretions.

Many ventilator dependent patients unable to cough effectively continue to use this device to clear airway secretions during respiratory tract infections.[14-16,62,65] Concurrent oximetry monitoring demonstrates immediate return to baseline levels with clearing of bronchial mucus plugs.[6] Mechanical exsufflation can permit earlier extubation of intubated or tracheostomized patients during ventilator weaning, and can be instrumental in permitting continued ventilatory support by noninvasive means during intercurrent respiratory tract infections.

Although safe and effective, manufacture of this device was discontinued in the early 1960s because of inadequate demand as the result of widespread resort to tracheostomy for suctioning. Its application may become vital, however, as the effectiveness of NV-PAP becomes more widely recognized.

Current Application of Noninvasive Ventilatory Aids for Postpoliomyelitis Patients

Respiratory failure was not an uncommon complication of paralytic poliomyelitis during the prevaccine epidemics earlier in this century. Many patients have remained ventilator assisted since the onset of polio; many others, freed from respiratory assistance since their acute polio, may once again require ventilatory aid.[15,16,67] The symptoms of chronic alveolar hypoventilation (CAH) which they present, including headaches, daytime drowsiness, difficulty sleeping, poor concentration, shortness of breath, etc., are often mistaken for psychological conditions or the general symptoms of a "post-polio syndrome."[65] Some patients with supine vital capacities significantly greater then 30% of predicted normal may present with severe CAH from a combination of paralytic, restrictive pulmonary syndrome and sleep disordered breathing. When left untreated, these patients may experience acute exacerbations of respiratory impairment requiring hospitalization. Unfortunately, few physicians are familiar with NV-PAP and tracheostomy is considered too drastic an option for these patients who otherwise often function well. Such patients are too often discharged on a combination of home oxygen therapy and pharmaceuticals which only encourage the development of atelectasis and exacerbation of CAH. Nocturnal noninvasive ventilatory assistance, not ventilator "weaning," should be the goal for any patient with less than 30% of predicted supine vital capacity or significant CO_2 retention.

Although many postpoliomyelitis patients have benefited for decades from a regimen of nocturnal BV support and daytime mouth IPPV, many such patients switched from nocturnal BV use to nocturnal NV-PAP when it was observed that the ventilatory assistance provided by BVs had become inadequate.[16,67] NV-PAP methods are also generally considered more convenient and permit the patient to sleep with a significant other.

Neuromuscular Disease

Progressive neuromuscular disease is not uncommon. Duchenne muscular dystrophy (DMD) alone occurs in about one in 3,000 males. Ventilatory failure is by far the most common cause of premature death in these patients. Alberion et al first described the prolongation of life by assisting the ventilation of such patients in 1973.[13] Alexander et al then emphasized that this could be done by using BVs without tracheostomy in 1979.[68] Since the description of mouth and nasal IPPV, there have been large series of patients with DMD whose lives have been prolonged by using these techniques[14,19,65] or by using a combination of these techniques along with body ventilators.[17]

Despite the success in prolonging the lives of DMD patients without severe cardiomyopathy by noninvasive ventilatory assistance,[69] such aid is introduced to patients in only a minority of Muscular Dystrophy Association (MDA) clinics.[70] Patients are usually only treated for ventilatory insufficiency and impaired cough under emergency circumstances and then cannot be weaned from IPPV via an endotracheal tube. These patients are then often forced to submit to tracheostomy for IPPV. Although few MDA clinic directors claimed to have any experience with noninvasive ventilatory aids, the most common reason given by these directors for not recommending or introducing any kind of elective aid was poor quality of life.[70] This is ironic considering that MDA clinic directors and other health care professionals vastly underestimate ventilator dependent DMD patients' satisfaction with life.[71] Recent technological advances in computers, robotics, and environmental control can also provide these patients with greater daily function to go along with improved longevity.[72]

Provided that oropharyngeal muscles are sufficiently intact to permit functional speech and swallowing, the same noninvasive approach can be taken to patients with other neuromuscular diseases including non-Duchenne myopathies, spinal muscular atrophies, and early amyotrophic lateral sclerosis. Many such patients, including some with DMD, can master GPB sufficiently for free time off ventilator support.

Traumatic Quadriplegia

The incidence of traumatic spinal cord injury is about 11,000 per year with a prevalence of about 238,000.[73] About 18% of those patients who require ventilatory support at some time during acute hospitalization or rehabilitation are discharged to the community using ventilatory support.[74] A number of the ventilator assisted patients discharged to the community eventually become free of ventilatory support over a course of two years or more.[75] With age, however, some patients develop late-onset CAH that may lead to repeated hospitalization and tracheostomy if not appropriately diagnosed and managed by noninvasive aids.[75]

The incidence of pulmonary problems, sudden death, and overall mortality in the population of high-level traumatic quadriplegic patients appears to be higher than in other ventilator assisted neuromuscular populations.[76,77] Whiteneck et al reported a seven-year mortality of over 40%.[76] Use of an indwelling tracheostomy, and occasionally EPP, may contribute to the increased mortality by increasing the likelihood of both cardiac[51] and respiratory complications.[58] This population is an excellent one in general, however, for conversion from invasive to noninvasive aids because of its youth and normal oropharyngeal musculature. Removal of the tracheostomy also permits the use of GPB and alleviates any fear of ventilator disconnection.[75,78] One center reports considerable success in converting the majority of its patients from tracheostomy IPPV to up to 24-hour long-term use of noninvasive ventilatory support.[78]

Many spinal cord injured patients with virtually intact oropharyngeal and inspiratory muscle function generate inadequate expiratory flows for clearance of airway secretions. Ineffective airway clearance mechanisms become life-threatening during otherwise minor upper respiratory tract infections. Indeed, pneumonia was the most common cause of death in a study of over 9,000 spinal cord injured patients over a period of six to 17 years postinjury.[79] Mechanical exsufflation, which, unlike tracheal suctioning, may immediately improve blood gases rather than cause severe hypoxia, may be useful in decreasing respiratory morbidity and mortality in this population.[80]

Considering the incidence of mortality and respiratory morbidity in the population of spinal injured patients managed by standard invasive techniques, the use of the noninvasive methods of assisted ventilation and coughing should be further explored.

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Clarification of the Role of CT Scan in the Acute Evaluation of Blunt Abdominal Trauma

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ABSTRACT—We reviewed 100 patients sustaining blunt trauma whose initial evaluation included an abdominal computed tomographic scan (CT) to assess the role of this modality in managing these patients. Indications for CT scan were suspicion of abdominal injury based on mechanism of injury (46), tenderness (22), falling hematocrit (9), hematuria (5), pain (4), and hyperamylasemia (1). Thirty-four patients had abdominal injury, and four scans identified non-traumatic pathology; 66 patients had no evidence of abdominal injury. There were no additional abdominal injuries detected during the hospitalizations. Mechanism of injury was the only indication for CT scan in 20 patients, none of whom had evidence of abdominal injury. CT scan charges for these 20 patients accounted for 5.5% of the total hospital bill ($204,070). Hospital costs would have been reduced by $11,270 if these patients had been followed clinically. Fifteen patients with soft tissue contusions and normal CT scans were hospitalized less than 72 hours. Room and other hospital charges accounted for 38.5% of the hospital bill; these are costs that would have been saved if these patients had been discharged from the emergency service.

Several conclusions can be made from this study. First, abdominal CT scan is a sensitive test for abdominal injury. Secondly, patients without objective signs of abdominal injury whose other injuries warrant admission allowing further observation should be followed clinically and do not need the additional expense of abdominal CT scan. Finally, mechanism of injury alone is not an indication for CT scan.

Introduction

BLUNT trauma frequently results in abdominal injury and the initial evaluation of the multiply-injured patient must identify or exclude abdominal trauma. Diagnostic peritoneal lavage (DPL) and more recently abdominal computed tomography (CT) scan are the most commonly employed techniques to evaluate abdominal injury; other imaging studies which have been used are angiography, liver-spleen nuclear scans, and (HIDA) scans.[1,3,4] Several recent series have compared DPL and CT scan with respect to specificity and sensitivity.[5,6,7] CT scan has been reported to have an accuracy as high as 98%.[5] DPL has been reviewed recently, and an overall accuracy of 99% has been reported.[6] Since CT scan appears to be an accurate means by which to assess abdominal trauma, this study was undertaken to: 1) assess the sensitivity and specificity of abdominal CT scan at this institution; 2) evaluate the indications for performing CT scan; 3) assess the feasibility of utilizing abdominal CT scan as a triage tool in determining admission decision making; and 4) analyze the cost of using abdominal CT scan in blunt trauma patients. Comparison studies between CT scan and DPL were not made in this study.

Methods

The records of 100 patients evaluated at the Yale-New Haven Hospital from July 1985 to June 1987 following blunt trauma were reviewed. These patients were hemodynamically stable as evidenced by systolic blood pressure greater than 100 mm Hg and no episodes of hypotension. All patients were evaluated by a general surgeon at the time of admission. Each patient had an abdominal and pelvic CT scan performed following administration of oral and intravenous contrast. Emergency room records, hospital charts, and radiology reports were analyzed on all patients. Medical Information Services

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provided detailed financial statements; costs were computed directly from charges entered on the hospital invoice. At the time of this study, the cost for an abdominal CT scan was $316, and $350 for a chest CT scan.

Results

Study group. The study group comprised 100 hemodynamically stable patients. There were 72 males and 28 females. The mean age was 28 years with an age range from three to 89 years. The mean Glasgow Coma Scale (GCS), trauma score (TS), and injury severity score (ISS) were 14, 15, and 17, respectively. There were 34 patients with abdominal injury (ISS = 22) and 66 patients without abdominal injury (ISS = 15).

Mechanism of injury. The most common mechanism of injury was motor vehicle crash accounting for 41% of all patients; the other mechanisms included pedestrian injury (25%), fall (12%), bicycle crash (11%), motorcycle crash (6%), and assault (5%). Distribution of mechanism of injury was similar between patients with and without abdominal injury (Table 1).

Table I

	Mechanism of Injury				
Mechanism	*Without Abd Inj*		*With Abd Inj*		*Total*
	N	%	N	%	
MV CRASH	30	45	11	32	41
PEDESTRIAN	19	29	6	18	25
FALL	5	7	7	20	12
BICYCLE	6	9	5	15	11
MC CRASH	5	7	1	3	6
ASSAULT	1	2	4	12	5
TOTAL	66	100 %	34	100 %	100

MV = Motor Vehicle
MC = Motorcycle

Indication for performing CT scan. There were frequently multiple indications for obtaining CT scan (Table 2). The most common indication was a mechanism of injury consistent with a high likelihood of abdominal injury. Mechanism of injury was an indication for scan in 46% of the entire group, 52% of patients with no abdominal injury and 33% of patients with abdominal injury. The second most common indication was tenderness, accounting for 22% of all patients, 18% of patients without and 31% of patients with abdominal injury. The other reasons for obtaining CT scan were pain (4%), falling hematocrit (9%), hematuria (5%), hyperamylasemia (1%), and altered mental status (12%).

Results of abnormal CT scans. Splenic rupture was the most frequently detected injury (10). Retroperitoneal hematoma (8), liver laceration/hematoma (6), and renal contusion/laceration (5) were the other common injuries. Mesenteric hematoma, isolated hemoperitoneum and hemorrhagic pancreatitis were each identified once.

Interestingly, there were unexpected findings on several CT scans unrelated to the traumatic event. Hydronephrosis, hypernephroma, hepatoma, and lung nodule were all visualized on CT scans in separate patients, and clinical care was altered for these unsuspected diagnoses identified on CT scan.

Mechanism of injury was the only indication for CT scan in 20 patients. All of these patients had normal scans without evidence of abdominal injury. Additionally, there were no abdominal injuries detected after admission in any of the patients.

Hospital course. Length of stays ranged from one to 66 days. No additional abdominal injuries were detected in either patients with or without injury or initial CT. The overall complication rate was 8% and there was a single death. The complications included pneumonia (2), pulmonary embolus (1), fat embolus (1), wound infection (2), and persistent fever (1).

Table 2

	Indication for Obtaining CT Scan		
Indication	*%Without Abd Inj*	*% With Abd Inj*	*% Total Patients*
MECHANISM	52	33	46
TENDERNESS	18	31	22
HEMATOCRIT DROP	8	12	9
MENTAL STATUS	15	8	12
PAIN	2	8	4
HEMATURIA	3	8	5
HYPERAMYLASEMIA	2	1	1

Fifteen patients had hospital stays less than 72 hours, including 12 patients who were hospitalized less than 48 hours. The latter group had injuries limited to soft tissue contusions and had an uncomplicated hospital course.

Financial analysis. The patients in this study were categorized into three groups to characterize further the indications, results, and charges for abdominal CT scan. The groupings were as follows:

I. Trauma patients with abdominal injuries (34).
II. Trauma patients without abdominal injuries hospitalized for more than 72 hours (51).
III. Trauma patients without abdominal injuries hospitalized for less than 72 hours (15).

Costs - Group I. These patients had abdominal injuries and for the purpose of this review, CT scan was considered an indicated test.

Costs - Group II. Twenty patients underwent CT scan based on mechanism of injury. All of these scans were normal. The cumulative hospital charges for these patients was $204,070; CT scan charges were $11,270 (5.5%). These patients sustained injuries which warranted admission and the opportunity for ongoing clinical evaluation. Therefore, clinical assessment without CT scan would have resulted in a substantial savings. A potential savings of $58,000 would have been possible for each group of 100 similarly injured patients. The remaining patients in Group II had more specific indications for undergoing CT scan and benefited from having abdominal injuries excluded early in their hospital course.

Costs - Group III. This group included 15 patients whose injuries were limited (ISS < 15). These patients underwent abdominal CT scan for varying indications including mechanism of injury, abdominal pain, abdominal tenderness, and hematuria. Their injuries were predominantly concussions and soft-tissue contusions. The hospital course in these patients was short (<72 hours) and uncomplicated. Total hospital charges for these patients were $47,626. Charges incurred by CT scan were $8,090 (17% of total bill); room and board charges were $11,170; other hospital expenses totalled $7,150. If these patients had not been admitted, a savings of $18,320 (38.5%) would have been realized. This strategy would yield a potential savings of $122,000 for each 100 patients with this type of minimal injury.

Comment

Multiple series have addressed the radiologic evaluation of the trauma patient and, more recently, as CT scanners have become more available, studies have focused on the results of CT scan compared with more traditional methods of evaluation.[1,2,5,6,7] This report has reviewed the experience in a single institution utilizing CT scan to evaluate abdominal injuries in blunt trauma patients. The findings of this study substantiate the previously reported accuracy of abdominal CT scan as evidenced by the absence of false positive and false negative scans. Thus, CT scan is a reliable modality when conducted according to a standardized protocol including the administration of intravenous and oral contrast agents.

An interesting result of this study was the observation that previously unrecognized nontraumatic pathology may be detected by abdominal CT scan. The 4% incidence of unsuspected nontraumatic lesions observed in this report may not reflect the true incidence of unrecognized pathology; however, this is an advantage which computed tomography has over other diagnostic tests.

Although abdominal CT scan is sensitive and specific, it is an expensive test and should not be used indiscriminately in the evaluation of trauma patients. The data presented here document that the yield of positive results is low without objective clinical data in the form of physical findings or abnormal laboratory tests to suggest abdominal injury. Mechanism of injury alone should not be an indication for using a CT scan.

CT scan is a reliable predictor of abdominal injury and appears to have a definite role in the evaluation of the hemodynamically stable blunt trauma victim. Frequently, minimally injured patients have clinical indications for abdominal CT scan. The trauma surgeon can use CT scan to guide management and identify patients for whom hospitalization may not be necessary. After evaluation by an experienced surgeon and a CT scan confirming no abdominal injury, this group of patients with minimal injury may be considered for discharge directly from the emergency service. In this way, substantial cost savings may be realized without sacrificing quality of patient care.

Conclusions

In summary, the results of this study suggest the following conclusions: First, abdominal CT scan is a sensitive and specific test for evaluating stable blunt trauma patients. Second, objective findings should guide selection of patients for whom CT scan is appropriate since scans obtained for mechanisms of injury alone have a low yield. Finally, CT scan may be used as a safe and cost-effective management tool in determining need for continued observation or possibly allowing discharge from the emergency service in selected patients.

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Rabies Prevention — United States, 1991

Recommendations of the Immunization Practices Advisory Committee (ACIP)

CENTERS FOR DISEASE CONTROL, ATLANTA

*These revised recommendations of the Immunization Practices Advisory Committee (ACIP) on rabies prevention update the previous recommendations (MMWR 1984; 33:393-402, 407-8) to reflect the current status of rabies and antirabies biologics in the United States.**

Introduction

FOLLOWING the marked decrease of rabies cases among domestic animals in the United States in the 1940s and 1950s, indigenously acquired rabies among humans decreased to fewer than two cases per year in the 1960s and 1970s and fewer than one case per year during the 1980s.[1] In 1950, for example, 4,979 cases of rabies were reported among dogs and 18 were reported among human populations; in 1989, 160 cases were reported among dogs and one was reported among humans. Thus, the likelihood of human exposure to a rabid domestic animal has decreased greatly; however, the many possible exposures that result from frequent contact between domestic dogs and humans continue to be the basis of most antirabies treatments.[2]

Rabies among wild animals—especially skunks, raccoons, and bats—has become more prevalent since the 1950s, accounting for $>85\%$ of all reported cases of animal rabies every year since 1976.[1] Rabies among animals occurs throughout the continental United States; only Hawaii remains consistently rabies-free. Wild animals now constitute the most important potential source of infection for both humans and domestic animals in the United States. In much of the rest of the world, including most of Asia, Africa, and Latin America, the dog remains the major species with rabies and the major source of rabies among humans. Nine of the 13 human rabies deaths reported to CDC from 1980 through 1990 appear to have been related to exposure to rabid animals outside of the United States.[3-9]

Although rabies among humans is rare in the United States, every year approximately 18,000 persons receive rabies preexposure prophylaxis and an additional 10.000 receive postexposure prophylaxis. Appropriate management of persons possibly exposed to rabies depends on the interpretation of the risk of infection. Decisions about management must be made immediately. All available methods of systemic prophylactic treatment are complicated by occasional adverse reactions, but these are rarely severe.[10-14]

Data on the efficacy of active and passive rabies immunization have come from both humans and animal studies. Evidence from laboratory and field experience in many areas of the world indicates that postexposure prophylaxis combining local wound treatment, passive immunization, and vaccination is uniformly effective when appropriately applied.[15-20] However, rabies has occasionally developed among humans when key elements of the rabies postexposure prophylaxis treatment regimens were omitted or incorrectly administered (see Postexposure Treatment Outside the United States).

Rabies Immunizing Products

There are two types of rabies immunizing products.

1) Rabies vaccines induce an active immune response that includes the production of neutralizing antibodies. This antibody response requires approximately 7-10 days to develop and usually persists for ≥ 2 years.

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*For assistance with problems or questions about rabies prophylaxis, contact the Connecticut Department of Health Services, or the Division of Viral and Rickettsial Diseases, Center for Infectious Diseases, CDC ([404] 639-1075 during working hours or [404] 639-2888 nights, weekends, and holidays).

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Rabies Immunizing Products, United States, 1991

Human Rabies Vaccine	
Rabies Vaccine, Human Diploid Cell (HDCV)	
Intramuscular	Imovax® Rabies
Intradermal	Imovax® Rabies I.D.
Rabies Vaccine Adsorbed (RVA)	
Rabies Immune Globulin (RIG)	
Rabies Immune Globulin, Human (HRIG):	Hyperab® Imogam® Rabies

2) Rabies immune globulins (RIG) provide rapid, passive immune protection that persists for only a short time (half-life of approximately 21 days).[21,22]

In almost all postexposure prophylaxis regimens, both products shoud be used concurrently.

Vaccines Licensed for Use in the United States

Two inactivated rabies vaccines are currently licensed for preexposure and postexposure prophylaxis in the United States.

Rabies Vaccine, Human Diploid Cell (HDCV)

HDCV is prepared from the Pitman-Moore strain of rabies virus grown in MRC-5 human diploid cell culture and concentrated by ultrafiltration.[23] The vaccine is inactivated with betapropiolactone[18] and is supplied in forms for:

1) Intramuscular (IM) administration, a single-dose vial containing lyophilized vaccine (Pasteur-Merieux Sérum et Vaccins, Imovax® Rabies, distribute by Connaught Laboratories, Inc., Phone: 800-VACCINE) that is reconstituted in the vial with the accompanying diluent to a final volume of 1.0 ml just before administration.
2) Intradermal (ID) administration, a single-dose syringe containing lyophilized vaccine (Pasteur-Merieux Sérum et Vaccins, Imovax® Rabies I.D., distributed by Connaught Laboratories, Inc.) that is reconstituted in the syringe to a volume of 0.1 ml just before administration.[24]

A human diploid cell-derived rabies vaccine developed in the United States (Wyeth Laboratories, Wyvac®) was recalled by the manufacturer from the market in 1985 and is no longer available.[25]

Rabies Vaccine, Adsorbed (RVA)

RVA (Michigan Department of Public Health) was licensed on March 19, 1988; it was developed and is currently distributed by the Biologics Products Program, Michigan Department of Public Health. The vaccine is prepared from the Kissling strain of Challenge Virus Standard (CVS) rabies virus adapted to fetal rhesus lung diploid cell culture.[26-32] The vaccine virus is inactivated with betapropiolactone and concentrated by adsorption to aluminum phosphate. Because RVA is adsorbed to aluminum phosphate, it is liquid rather then lyophilized. RVA is currently available only from the Biologics Products Program, Michigan Department of Public Health. Phone: (517) 335-8050

Both types of rabies vaccines are considered equally efficacious and safe when used as indicated. The full 1.0-ml dose of either product can be used for both preexposure and postexposure prophylaxis. Only the Imovax® Rabies I.D. vaccine (HDVC) has been evaluated by the ID dose/route for preexposure vaccination;[33-36] the antibody response and side effects after ID administration of RVA have not been studied.[24] *Therefore, RVA should not be used intradermally.*

Rabies Immune Globulins Licensed for use in the United States

HRIG (Cutter Biological [a division of Miles Inc.], Hyperab®; and Pasteur-Merieux Sérum et Vaccins, Imogam® Rabies, distributed by Connaught Laboratories, Inc.) is an antirabies gamma globulin concentrated by cold ethanol fractionation from plasma of hyperimmunized human donors. Rabies neutralizing antibody content, standardized to contain 150 international units (IU) per ml, is supplied in 2-ml (300 IU) and 10-ml (1,500 IU) vials for pediatric and adult use, respectively.

Both HRIG preparations are considered equally efficacious and safe when used as described in this document.

Postexposure Prophylaxis: Rationale for Treatment

Physicians should evaluate each possible exposure to rabies and if necessary consult with local or state public health officials regarding the need for rabies prophylaxis (Table 1). In the United States, the following factors should be considered before specific antirabies treatment is initiated.

Type of Exposure

Rabies is transmitted only when the virus is introduced into open cuts or wounds in skin or mucous membranes.

Table 1. Rabies postexposure prophylaxis guide, United States, 1991

Animal type	Evaluation and disposition of animal	Postexposure prophylaxis recommendations
Dogs and cats	Healthy and available for 10 days observation	Should not begin prophylaxis unless animal develops symptoms of rabies*
	Rabid or suspected rabid	Immediate vaccination
	Unknown (escaped)	Consult public health officials
Skunks, raccoons, bats, foxes, and most other carnivores; woodchucks	Regarded as rabid unless geographic area is known to be free of rabies or until animal proven negative by laboratory tests†	Immediate vaccination
Livestock, rodents, and lagomorphs (rabbits and hares)	Consider individually	Consult public health officials. Bites of squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, other rodents, rabbits, and hares almost never require antirabies treatment

*During the 10-day holding period, begin treatment with HRIG and HDCV or RVA at first sign of rabies in a dog or cat that has bitten someone. The symptomatic animal should be killed immediately and tested.

†The animal should be killed and tested as soon as possible. Holding for observation is not recommended. Discontinue vaccine if immunofluorescence test results of the animal are negative.

If there has been no exposure (as described in this section), postexposure treatment is not necessary. The likelihood of rabies infection varies with the nature and extent of exposure. Two categories of exposure (bite and nonbite) should be considered.

BITE

Any penetration of the skin by teeth constitutes a bite exposure. Bites to the face and hands carry the highest risk, but the site of the bite should not influence the decision to begin treatment.[17]

NONBITE

Scratches, abrasions, open wounds, or mucous membranes contaminated with saliva or other potentially infectious material (such as brain tissue) from a rabid animal constitute nonbite exposures. If the material containing the virus is dry, the virus can be considered noninfectious.

Other contact by itself, such as petting a rabid animal and contact with blood, urine, or feces (eg, guano) of a rabid animal, does not constitute an exposure and is not an indication for prophylaxis.

Although occasional reports of transmission by nonbite exposure suggest that such exposures constitute reason to initiate postexposure prophylaxis under some circumstances, nonbite exposures rarely cause rabies.[37] The nonbite exposures of highest risk appear to be exposures to large amounts of aerosolized rabies virus, organs (ie, corneas) transplanted from patients who died of rabies, and scratches by rabid animals. Two cases of rabies have been attributed to airborne exposures in laboratories, and two cases of rabies have been attributed to probable airborne exposures in a bat-infested cave in Texas.[38,39]

The only documented cases of rabies caused by human-to-human transmission occurred among six recipients of transplanted corneas. Investigations revealed each of the donors had died of an illness compatible with or proven to be rabies.[40-43] The six cases occurred in four countries: Thailand (two cases), India (two cases), the United States (one case), and France (one case). Stringent guidelines for acceptance of donor corneas have reduced this risk.

Apart from corneal transplants, bite and nonbite exposures inflicted by infected humans could theoretically transmit rabies, but no such cases have been documented.[44] Adherence to respiratory precautions will minimize the risk of airborne exposure.[45]

Animal Rabies Epidemiology and Evaluation of Involved Species

WILD ANIMALS

Carnivorous wild animals (especially skunks, raccoons, and foxes) and bats are the animals most often infected with rabies and the cause of most indigenous cases of human rabies in the United States since 1960.[1] All bites by wild carnivores and bats must be considered possible exposures to the disease. Postexposure prophylaxis should be initiated when patients are exposed to wild carnivores unless 1) the exposure occurred in a part of the continental United States known to be free of terrestrial rabies and the results of immunofluorescence antibody testing will be available within 48 hours or 2) the animal has already been tested and shown not to be rabid. If treatment has been initiated and subsequent immunofluorescence testing shows that the exposing animal was not rabid, treatment can be discontinued.

Signs of rabies among carnivorous wild animals cannot be interpreted reliably; therefore, any such animals that bites or scratches a person should be killed at once (without unnecessary damage to the head) and the brain submitted for rabies testing. If the results of testing are negative by immunofluorescence, the saliva can be assumed to contain no virus, and the person bitten does not require treatment.

If the biting animal is a particularly rare or valuable specimen and the risk of rabies small, public health authorities may choose to administer postexposure treatment to the bite victim in lieu of killing the animal for rabies testing.[46] Such animals should be quarantined for 30 days.

Rodents (such as squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, and mice) and lagomorphs (including rabbits and hares) are almost never found to be infected with rabies and have not been known to cause rabies among humans in the United States. However, from 1971 through 1988, woodchucks accounted for 70% of the 179 cases of rabies among rodents reported to CDC.[47] In all cases involving rodents, the state or local health department should be consulted before a decision is made to initiate postexposure antirabies prophylaxis.

Exotic pets (including ferrets) and domestic animals crossbred with wild animals are considered wild animals by the National Association of State Public Health Veterinarians (NASPHV) and the Conference of State and Territorial Epidemiologists (CSTE) because they may be highly susceptible to rabies and could transmit the disease. Because the period of rabies virus shedding in these animals is unknown, these animals should be killed and tested rather than confined and observed when they bite humans.[46] Wild animals (skunks, raccoons, and bats) and wild animals crossbred with digs should not be kept as pets.[46]

Domestic Animals

The likelihood that a domestic animal is infected with rabies varies by region; hence, the need for postexposure prophylaxis also varies. In the continental United States, rabies among dogs is reported most commonly along the U.S.-Mexico border and sporadically from the areas of the United States with enzootic wildlife rabies, especially the Midwest. During most of the 1980s in the United States, more cats than dogs were reported rabid; the majority of these cases were associated with the mid-Atlantic epizootic of rabies among raccoons. The large number of rabies-infected cats may be attributed to fewer cat vaccination laws, fewer leash laws, and the roaming habits of cats. Cattle tend to be most often exposed to rabies via rabid skunks.

In areas where canine rabies is not enzootic (including virtually all of the United States and its territories), a healthy domestic dog or cat that bites a person should be confined and observed for 10 days. Any illness in the animal during confinement or before release should be evaluated by a veterinarian and reported immediately to the local health department. If signs suggestive of rabies develop, the animal should be humanely killed and its head removed and shipped, under refrigeration, for examination by a qualified laboratory. Any stray or unwanted dog or cat that bites a person should be killed immediately and the head submitted as described for rabies examination.[46]

In most developing countries of Asia, Africa, and Central and South America, dogs are the major vector of rabies; exposures to dogs in such countries represent a special threat. Travelers to these countries should be aware that >50% of the rabies cases among humans in the United States result from exposure to dogs outside the United States. Although dogs are the main reservoir of rabies in these countries, the epizootiology of the disease among animals differs sufficiently by region or country to warrant the evaluation of all animal bites.

Exposures to dogs in canine rabies-enzootic areas outside the United States carry a high risk; some authorities therefore recommend that postexposure rabies treatment be initiated immediately after such exposures. Treatment can be discontinued if the dog or cat remains healthy during the 10-day observation period.

Circumstances of Biting Incident and Vaccination Status of Exposing Animal

An unprovoked attack by a domestic animal is more likely than a provoked attack to indicate that the animal is rabid. Bites inflicted on a person attempting to feed or handle an apparently healthy animal should generally be regarded as provoked.

A fully vaccinated dog or cat is unlikely to become infected with rabies, although rare cases have been reported.[48] In a nationwide study of rabies among dogs and cats in 1988, only one dog and two cats that were vaccinated contracted rabies.[49] All three of these animals had received only single doses of vaccine; no documented vaccine failures occurred among dogs or cats that had received two vaccinations.

Table 2. Rabies postexposure prophylaxis schedule, United States, 1991

Vaccination status	Treatment	Regimen*
Not previously vaccinated	Local wound cleansing	All postexposure treatment should begin with immediate thorough cleansing of all wounds with soap and water.
	HRIG	20 IU/kg body weight. If anatomically feasible, up to one-half the dose should be infiltrated around the wound(s) and the rest should be administered IM in the gluteal area. HRIG should not be administered in the same syringe or into the same anatomical site as vaccine. Because HRIG may partially suppress active production of antibody, no more than the recommended dose should be given.
	Vaccine	HDCV or RVA, 1.0 ml, IM (deltoid area[†]), one each on days 0, 3, 7, 14 and 28.
Previously vaccinated[§]	Local wound cleansing	All postexposure treatment should begin with immediate thorough cleansing of all wounds with soap and water.
	HRIG	HRIG should not be administered.
	Vaccine	HDCV or RVA, 1.0 ml, IM (deltoid area[†]), one each on days 0 and 3.

*These regimens are applicable for all age groups, including children.

[†] The deltoid area is the only acceptable site of vaccination for adults and older children. For younger children, the outer aspect of the thigh may be used. Vaccine should never be administered in the gluteal area.

[§] Any person with a history of preexposure vaccination with HDCV or RVA; prior postexposure prophylaxis with HDCV or RVA; or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination.

Postexposure Prophylaxis: Local Treatment of Wounds and Vaccination

The essential components of rabies postexposure prophylaxis are local wound treatment and the administration, in most instances, of both HRIG and vaccine (Table 2). Persons who have been bitten by animals suspected or proven rabid should begin treatment within 24 hours. However, there have been instances when the decision to begin treatment was not made until many months after the exposure because of a delay in recognition that an exposure had occurred and awareness that incubation periods of > 1 year have been reported.

In 1977, the World Health Organization (WHO) recommended a regimen of RIG and six doses of HDCV over a 90-day period. This recommendation was based on studies in Germany and Iran.[16,20] When used this way, the vaccine was found to be safe and effective in protecting persons bitten by proven rabid animals and induced an excellent antibody response in all recipients.[16] Studies conducted in the United States by CDC have shown that a regimen of one dose of HRIG and five doses of HDCV over a 28-day period was safe and induced an excellent antibody response in all recipients.[15]

Local Treatment of Wounds

Immediate and thorough washing of all bite wounds and scratches with soap and water is an important measure for preventing rabies. In studies of animals, simple wound cleansing has been shown to reduce markedly the likelihood of rabies.[50,51] Tetanus prophylaxis and measures to control bacterial infection should be given as indicated. The decision to suture large wounds should take into account cosmetic factors and the potential for bacterial infections.

Immunization

VACCINE USAGE

Two rabies vaccines are currently available in the United States; either is administered in conjunction with HRIG at the beginning of postexposure therapy. A regimen of five 1-ml doses of HDCV or RVA should be given intramuscularly. The first dose of the five-dose course should be given as soon as possible after exposure. Additional doses should be given on days 3, 7, 14, and 28 after the first vaccination. For adults, the vaccine should always be administered IM in the deltoid area. For children, the anterolateral aspect of the thigh is also acceptable. The gluteal area should never be used for HDCV or RVA injections, since administration in this area results in lower neutralizing antibody titers.[52]

Postexposure antirabies vaccination should always include administration of both passive antibody and vaccine, with the exception of persons who have previously received complete vaccination regimens (preexposure or postexposure) with a cell culture vaccine, or persons who have been vaccinated with other types of vaccines and have had documented rabies antibody titers. These persons should receive only vaccine (see Postexposure Therapy of Previously Vaccinated Persons). The combination of HRIG (local and systemic) and vaccine is recommended for both bite and nonbite exposures (see Postexposure Prophylaxis: Rationale for Treatment), regardless of the interval between exposure and initiation of treatment.

Because the antibody response after the recommended postexposure vaccination regimen with HDCV or RVA has been satisfactory, routine postvaccination serologic testing is not recommended. Serologic testing is only indicated in unusual instances, as when the patient is known to be immunosuppressed. The state health department may be contacted for recommendation on this matter.

HRIG Usage

HRIG is administered only once (ie, at the beginning of antirabies prophylaxis) to provide immediate antibodies until the patient responds to HDCV or RVA by actively producing antibodies. If HRIG was not given when vaccination was begun, it can be given through the seventh day after administration of the first dose of vaccine. Beyond the seventh day, HRIG is not indicated since an antibody response to cell culture vaccine is presumed to have occurred. The recommended dose of HRIG is 20 IU/kg. This formula is applicable for all age groups, including children. If anatomically feasible, up to one-half the dose of HRIG should be thoroughly infiltrated in the area around the wound and the rest should be administered intramuscularly in the gluteal area. *HRIG should never be administered in the same syringe or into the same anatomical site as vaccine.* Because HRIG may partially suppress active production of antibody, no more than the recommended dose should be given.[53]

Vaccination and Serologic Testing

The effectiveness of rabies vaccines is primarily measured by their ability to protect persons exposed to rabies. HDCV has been used effectively with HRIG or equine antirabies serum (ARS) worldwide to treat persons bitten by various rabid animals.[15,16] An estimated one million people worldwide have received rabies postexposure prophylaxis with HDCV since its introduction 12 years ago.[54]

In studies of animals, anitbody titers have been shown to be markers of protection. Antibody titers will vary with time since the last vaccination. Differences among laboratories that test blood samples may also influence the results.

Serologic Response Shortly After Vaccination

All persons tested at CDC 2-4 weeks after completion of preexposure and postexposure rabies prophylaxis according to ACIP guidelines have demonstrated an antibody response to rabies.[15,55,56] Therefore, it is not necessary to test serum samples from patients completing preexposure or postexposure prophylaxis to document seroconversion unless the person is immunosuppressed (see Precautions and Contraindications). If titers are obtained, specimens collected 2-4 weeks after preexposure or postexposure prophylaxis should completely neutralize challenge virus at a 1:25 serum dilution by the rapid fluorescent focus inhibition test (RFFIT). (This dilution is approximately equivalent to the minimum titer of 0.5 IU recommended by the WHO.)

Serologic Response and Preexposure Booster Doses of Vaccine

Two years after primary preexposure vaccination, a 1:5 serum dilution will fail to neutralize challenge virus completely (by RFFIT) among 2%-7% of persons who received the three-dose preexposure series intramuscularly and 5%-17% of persons who received the three-dose series intradermally.[57] If the titer falls below 1:5, a preexposure booster dose of vaccine is recommended for a person at continuous or frequent risk (Table 3) of exposure to rabies. The following guidelines are recommended for determining when serum testing should be performed after primary preexposure vaccination:

1. A person in the continuous risk category (Table 3) should have a serum sample tested for rabies antibody every 6 months.[58]
2. A person in the frequent risk category (Table 3) should have a serum sample tested for rabies antibody every 2 years.

State or local health departments may provide the names and addresses of laboratories performing rabies serologic testing.

Postexposure Treatment Outside the United States

U.S. citizens and residents who are exposed to rabies while traveling outside the United States in countries where rabies is endemic may sometimes receive postexposure therapy with regimens or biologics that are not used in the United States. The following information is provided to familiarize physicians with some of the regimens used more widely abroad. These schedules have not been submitted for approval by the Food and Drug Administration (FDA) for use in the United States. If postexposure treatment is begun outside the United States using one of these regimens or biologics of nerve tissue origin, it may be necessary to provide additional treatment when the patient reaches the United States. State or local health departments should be contacted for specific advice in such cases.

Modifications to the postexposure vaccine regimen approved for use in the United States have been made to

Table 3. Rabies preexposure prophylaxis guide, United States, 1991

Risk category	Nature of risk	Typical populations	Preexposure recommendations
Continuous	Virus present continuously, often in high concentrations. Aerosol, mucous membrane, bite, or nonbite exposure. Specific exposures may go unrecognized.	Rabies research lab worker;* rabies biologics production workers.	Primary course. Serologic testing every 6 months; booster vaccination when antibody level falls below acceptable level.†
Frequent	Exposure usually episodic, with source recognized, but exposure may also be unrecognized. Aerosol, mucous membrane, bite, or nonbite exposure.	Rabies diagnostic lab workers,* spelunkers, veterinarians and staff, and animal-control and wildlife workers in rabies enzootic areas. Travelers visiting foreign areas of enzootic rabies for more than 30 days.	Primary course. Serologic testing or booster vaccination every 2 years.†
Infrequent (greater than population at large)	Exposure nearly always episodic with source recognized. Mucous membrane, bite, or nonbite exposure.	Veterinarians and animal-control and wildlife workers in areas of low rabies enzooticity. Veterinary students.	Primary course; no serologic testing or booster vaccination.
Rare (population at large)	Exposures always episodic. Mucous membrane, or bite with source unrecognized.	U.S. population at large, including persons in rabies epizootic areas.	No vaccination necessary.

*Judgment of relative risk and extra monitoring of vaccination status of laboratory workers is the responsibility of the laboratory supervisor (*58*).

†Minimum acceptable antibody level is complete virus neutralization at a 1:5 serum dilution by RFFIT. Booster dose should be administered if the titer falls below this level.

reduce the cost of postexposure prophylaxis and hasten the development of active immunity.[59] Costs are reduced primarily by substituting various schedules of ID injections (0.1 ml each) of HDCV (or newer tissue culture-derived rabies vaccines for humans) for IM injection of HDCV. Two such regimens are efficacious among persons bitten by rabid animals.[60] One of these regimens consists of 0.1-ml ID doses of HDCV given at eight different sites (deltoid, suprascapular, thigh, and abdominal wall) on day 0; four ID 0.1-ml doses given at four sites on day 7 (deltoid, thigh) and one ID 0.1-ml dose given in the deltoid on both day 28 and 91. Another ID regimen shown to be efficacious and now widely used in Thailand employs Purified VERO Cell Rabies Vaccine (Pasteur-Merieux), with 0.1-ml doses given at two different sites on days 0, 3, and 7, followed by one 0.1-ml booster on days 30 and 90.[61]

Strategies designed to hasten the development of active immunity have concentrated on administering more IM or ID doses at the time postexposure prophylaxis is initiated with fewer doses thereafter.[62] The most extensively evaluated regimen in this category, developed in Yugoslavia, has been the 2-1-1 regimen (two 1.0-ml IM doses on day 0, and one each on days 7 and 21).[63-65] However, when using HRIG in conjunction with this schedule, there may be some suppression of the neutralizing antibody response.[65]

Purified antirabies sera of equine origin (Sclavo; Pasteur-Merieux; Swiss Serum and Vaccine Institute, Bern) have been used effectively in developing countries where HRIG may not be available. The incidence of adverse reactions has been low (0.8%-6.0%) and most of those that occurred were minor.[66-68]

Although no postexposure vaccine failures have occurred in the United States during the 10 years that HDCV has been licensed, seven persons have contracted rabies after receiving postexposure treatment with both HRIG and HDCV outside the United States. An additional six persons have contracted the disease after receiving postexposure prophylaxis with other cell culture-derived vaccines and HRIG or ARS. However, in each of these cases, there was some deviation from the recommended

Table 4. Rabies preexposure prophylaxis schedule, United States, 1991

Type of vaccination	Route	Regimen
Primary	IM	HDCV or RVA, 1.0 ml (deltoid area), one each on days 0, 7, and 21 or 28
	ID	HDCV, 0.1 ml, one each on days 0, 7, and 21 or 28
Booster*	IM	HDCV or RVA, 1.0 ml (deltoid area), day 0 only
	ID	HDCV, 0.1 ml, day 0 only

*Administration of routine booster dose of vaccine depends on exposure risk category as noted in Table 3.

postexposure treatment protocol.[69-71] Specifically, patients who contracted rabies after postexposure prophylaxis did not have their wounds cleansed with soap and water or other antiviral agents, did not receive their rabies vaccine injections in the deltoid area (ie, vaccine was administered in the gluteal area), or did not receive passive vaccination around the wound site.

Preexposure Vaccination and Postexposure Therapy of Previously Vaccinated Persons

Preexposure vaccination should be offered to persons among high-risk groups, such as veterinarians, animal handlers, certain laboratory workers, and persons spending time (e.g., 1 month) in foreign countries where canine rabies is endemic. Other persons whose activities bring them into frequent contact with rabies virus or potentially rabid dogs, cats, skunks, raccoons, bats, or other species at risk of having rabies should also be considered for preexposure prophylaxis.

Preexposure prophylaxis is given for several reasons. First, it may provide protection to persons with inapparent exposures to rabies. Second, it may protect persons whose postexposure therapy might be delayed. Finally, although preexposure vaccination does not eliminate the need for additional therapy after a rabies exposure, it simplifies therapy by eliminating the need for HRIG and decreasing the number of doses of vaccine needed—a point of particular importance for persons at high risk of being exposed to rabies in areas where immunizing products may not be available or where they may carry a high risk of adverse reactions.

Primary Preexposure Vaccination

INTRASMUSCULAR PRIMARY VACCINATION

Three 1.0-ml injections of HDCV or RVA should be given intramuscularly (deltoid area), one each on days 0, 7, and 21 or 28 (Table 4). In a study in the United States, >1,000 persons received HDCV according to this regimen. Antibody was demonstrated in serum samples of all subjects when tested by the RFFIT. Other studies produced comparable results.[33,56,72,73]

INTRADERMAL PRIMARY VACCINATION

A regimen of three 0.1-ml doses of HDCV, one each on days 0, 7, and 21 or 28,[10,33,34,36,72,73] is also used for preexposure vaccination (Table 4). The ID dose/route has been recommended previously by the ACIP as an alternative to the 1.0-ml IM dose/route for rabies preexposure prophylaxis with HDCV.[24,74]

Pasteur-Merieux developed a syringe containing a single dose of lyophilized HDCV (Imovax® Rabies I.D.) that is reconstituted in the syringe just before administration. The syringe is designed to deliver 0.1 ml of HDCV reliably and was approved by the FDA in 1986.[24] The 0.1-ml ID doses, given in the area over the deltoid (lateral aspect of the upper arm) on days 0, 7, and 21 or 28, are used for primary preexposure vaccination. One 0.1-ml ID dose is used for booster vaccination (see Table 3). The 1.0-ml vial is not approved for multi-dose ID use. *RVA should not be given by the ID dose/route.*[26]

Chloroquine phosphate (administered for malaria chemoprophylaxis) interferes with the antibody response to HDCV.[75] Accordingly, HDCV should not be administered by the ID dose/route to persons traveling to malaria-endemic countries while the person is receiving chloroquine.[76] The IM dose/route of preexposure prophylaxis provides a sufficient margin of safety in this situation.[76] For persons who will be receiving both rabies preexposure prophylaxis and chloroquine in preparation for travel to a rabies-enzootic area, the ID dose/route should be initiated at least 1 month before travel to allow for completion of the full three-dose vaccine series before antimalarial prophylaxis begins. If this schedule is not possible, the IM dose/route should be used. Although interference with the immune response to rabies vaccine by other antimalarial structurally related to chloroquine (e.g., mefloquine) has not been evaluated, it would seem prudent to follow similar precautions for persons receiving these drugs.

Booster Vaccination

PREEXPOSURE BOOSTER DOSES OF VACCINE

Persons who work with live rabies virus in research laboratories or vaccine production facilities (continuous risk category; see Table 3) are at the highest risk of inapparent exposures. Such persons should have a serum sample tested for rabies antibody every 6 months (Table 4). Booster doses (IM or ID) of vaccine should be given to maintain a serum titer corresponding to at least complete neutralization at a 1:5 serum dilution by the RFFIT. The frequent risk category includes other laboratory workers, such as those doing rabies diagnostic testing, spelunkers, veterinarians and staff, animal-control and wildlife officers in areas where animal rabies is epizootic, and international travelers living or visiting (for >30 days) in areas where canine rabies is endemic. Persons among this group should have a serum sample tested for rabies antibody every 2 years and, if the titer is less than complete neutralization at a 1:5 serum dilution by the RFFIT, should have a booster dose of vaccine. Alternatively, a booster can be administered in lieu of a titer determination. Veterinarians and animal control and wildlife officers working in areas of low rabies enzooticity (infrequent exposure group) do not require routine preexposure booster doses of HDCV or RVA after completion of primary preexposure vaccination (Table 3).

POSTEXPOSURE THERAPY OF PREVIOUSLY VACCINATED PERSONS

If exposed to rabies, persons previously vaccinated should receive two IM doses (1.0 ml each) of vaccine, one immediately and one 3 days later. Previously vaccinated refers to persons who have received one of the recommended preexposure or postexposure regimens of HDCV or RVA, or those who received another vaccine and had a documented rabies antibody titer. HRIG is unnecessary and should not be given in these cases because an anamnestic antibody response will follow the administration of a booster regardless of the prebooster antibody titer.[77]

Preexposure Vaccination and Serologic Testing

Because the antibody response after these recommended preexposure prophylaxis vaccine regimens has been satisfactory, serologic testing is not necessary except for persons suspected of being immunosuppressed. Patients who are immunosuppressed by disease or medications should postpone preexposure vaccinations. Immunosuppressed persons who are at risk of rabies exposure should be vaccinated and their antibody titers checked.

Unintentional Inoculation with Modified Live Rabies Virus

Veterinary personnel may be inadvertently exposed to attenuated rabies virus while administering modified live rabies virus (MLV) vaccines to animals. Although there have been no reported rabies cases among humans resulting from exposure to needle sticks or sprays with licensed MLV vaccines, vaccine-induced rabies has occurred among animals given these vaccines. Absolute assurance of a lack of risk for humans, therefore, cannot be given. The best evidence of low risk is the absence of recognized cases of vaccine-associated disease among humans despite frequent inadvertent exposures.

MLV animal vaccines that are currently available are made with one attenuated strain of rabies virus: high egg passage (HEP) Flury strain. The HEP Flury strain has been used in animal vaccines for more than 25 years without evidence of associated disease among humans; therefore, postexposure treatment is not recommended following exposure to this type of vaccine by needle sticks or sprays.

Because the data are insufficient to assess the true risk associated with any of the MLV vaccines, preexposure vaccination and periodic boosters are recommended for all persons whose activities either bring them into contact with potentially rabid animals or who frequently handle attenuated animal rabies vaccine.

Adverse Reactions

Human Diploid Cell Rabies Vaccine and Rabies Vaccine Adsorbed

Reactions after vaccination with HDCV and RVA are less serious and common than with previously available vaccines.[78,79] In studies using a three-dose postexposure regimen of HDCV, local reactions, such as pain, erythema, and swelling or itching at the injection site, have been reported among 30%-74% of recipients. Systemic reactions, such as headache, nausea, abdominal pain, muscle aches, and dizziness have been reported among 5%-40% of recipients. Three cases of neurologic illness resembling Guillain-Barré syndrome that resolved without sequelae in 12 weeks have been reported.[10,80,81] In addition, a few other subacute central and peripheral nervous system disorders have been temporally associated with HDCV vaccine, but a casual relationship has not been established.[82]

An immune complex-like reaction occurs among approximately 6% of persons receiving booster doses of HDCV[11,12] 2-21 days after administration of the booster dose. These patients develop a generalized urticaria, sometimes accompanied by arthralgia, arthritis, angioedema, nausea, vomiting, fever, and malaise. In no cases have the illnesses been life-threatening. This reaction occurs much less frequently among persons receiving primary vaccination.

The reaction has been associated with the presence of betapropiolactone-altered human serum albumin in the HDCV and the development of immunoglobulin E (IgE) antibodies to this allergen.[83,84] Among persons who have received their primary vaccination series with HDCV, administration of boosters with a purified HDCV produced in Canada (Connaught Laboratories Ltd., Rabies Vaccine Inactivated [Diploid Cell Origin]-Dried) does not appear to be associated with this reaction.[57] This vaccine is not yet licensed in the United States.

Vaccines and Immune Globulins Used in Other Countries

Many developing countries use inactivated nerve tissue vaccines made from the brains of adult animals or suckling mice. Nerve tissue vaccine (NTV) is reported to induce neuroparalytic reactions among approximately 1 per 200 to 1 per 2,000 vaccines; suckling mouse brain vaccine (SMBV) causes reactions in among approximately 1 per 8,000.[17]

Human Rabies Immune Globulins

Local pain and low-grade fever may follow receipt of HRIG. Although not reported specifically for HRIG, angioneurotic edema, nephrotic syndrome, and anaphylaxis have been reported after injection of immune globulin (IG). These reactions occur so rarely that a causal relationship between IG and these reactions is not clear.

There is no evidence that hepatitis B virus (HBV), human immunodeficiency virus (HIV, the causative agent of Acquired Immunodeficency Syndrome [AIDS]), or other viruses have ever been transmitted by commercially available HRIG in the United States.

Management of Adverse Reactions

Once initiated, rabies prophylaxis should not be interrupted or discontinued because of local or mild systemic adverse reactions to rabies vaccine. Usually such reactions can be successfully managed with anti-inflammatory and antipyretic agents (eg, aspirin).

When a person with a history of serious hypersensitivity to rabies vaccine must be revaccinated, antihistamines may be given. Epinephrine should be readily available to counteract anaphylactic reactions, and the person should be observed carefully immediately after vaccination.

Although serious systemic, anaphylactic, or neuroparalytic reactions are rare during and after the administration of rabies vaccines, such reactions pose a serious dilemma for the attending physician.[11] A patient's risk of acquiring rabies must be carefully considered before deciding to discontinue vaccination. Advice and assistance on the management of serious adverse reactions for persons receiving rabies vaccines may be sought from the state health department or CDC.

All serious systemic, neuroparalytic, or anaphylactic reactions to HDCV should be reported immediately to Connaught Laboratories, Inc., Swiftwater, PA 18370. Phone: (800) VACCINE or (717) 839-7187. Serious reactions after the administration of RVA should be reported immediately to Coordinating Physicians, Bureau of Laboratories and Epidemiological Services, Michigan Department of Public Health, P. O. Box 30035, 3500 N. Logan, Lansing, MI 48909. Phone: (517) 335-8050.

Precautions and Contraindications

Immunosuppression

Corticosteroids, other immunosuppressive agents, antimalarials, and immunosuppressive illnesses can interfere with the development of active immunity after vaccination and may predispose the patient to rabies.[75,85] Preexposure prophylaxis should be administered to such persons with the awareness that the immune response may be inadequate (see Intradermal Primary Vaccination). Immunosuppressive agents should not be administered during postexposure therapy unless essential for the treatment of other conditions. When rabies postexposure prophylaxis is administered to persons receiving steroids or other immunosuppressive therapy, it is especially important that a serum sample be tested for rabies antibody to ensure that an acceptable antibody response has developed (see Vaccination and Serologic Testing).

Pregnancy

Because of the potential consequences of inadequately treated rabies exposure and because there is not indication that the fetal abnormalities have been associated with rabies vaccination, pregnancy is not considered a contraindication to postexposure prophylaxis.[86] If there is substantial risk of exposure to rabies, postexposure prophylaxis may also be indicated during pregnancy.

Allergies

Persons who have a history of serious hypersensitivity to rabies vaccine should be revaccinated with caution (see Management of Adverse Reactions).

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DRUG INFORMATION UPDATE: HARTFORD HOSPITAL

Ganciclovir (Cytovene®) in the Treatment of Cytomegalovirus Retinitis

DONNA SOUCY, R.PH.

Introduction

GANCICLOVIR is an antiviral agent available for intravenous use in the treatment of cytomegalovirus (CMV) retinitis. The safety and efficacy of ganciclovir in the treatment of other CMV infections has not been established.

CMV retinitis is an opportunistic infection that commonly occurs in the immunosuppressed patients such as those with AIDS, and associated with transplantion or chemotherapy. If left untreated, CMV retinitis can result in blindness due to complete destruction of the retina.

Mechanism of Action and Spectrum of Activity

Ganciclovir, an analogue of acyclovir, is thought to be phosphorylated to its monophosphate form by deoxyguanosine kinase and further phosphorylated to its di- and triphosphate form by cellular kinases.[1-3,27] Ganciclovir triphosphate, the active moiety, competitively inhibits CMV DNA polymerases and therefore inhibits the replication of the virus. Ganciclovir is virostatic, therefore once drug therapy is stopped the infection will recur as long as the patient remains immunosuppressed.[1-3,7-28]

In vitro, ganciclovir also exerts antiviral activity against human herpes virus Type 6, herpes simplex virus 1 and 2, Epstein-Barr virus, varicella zoster virus and human adenovirus. In vitro concentrations of ganciclovir triphosphate have been shown to be 10 times greater than those of acyclovir triphosphate in CMV infected cells.[1] Reported MIC values range between 0.02-3.0 μg/ml for ganciclovir against CMV.[4,7]

Pharmacokinetics

The precise pharmacokinetics of ganciclovir are not known but it appears to exhibit dose-independent pharmacokinetics within the usual dosing range.[3,4] Ganciclovir is approximately 3% bioavailable when given orally.[6] Its volume of distribution is approximately 32.8 L/1.73 m^2. Plasma protein binding is negligible (1-2%). Ganciclovir penetrates the cerebral spinal fluid (38-41%), the liver (92%), and the lungs (99%) as well as having adequate ocular distribution (87%) following intravenous administration. The serum half-life of ganciclovir is two to four hours, however, 60-70% of ganciclovir triphosphate remains in CMV infected cells 18 hours after extracellular concentrations reach zero.[1-4] The half-life of intravitreally administered ganciclovir is 13.3 hours.[28] Inhibitory dose for 50% (ID_{50}) levels are maintained within the eye for about 60 hours following a 200 mcg intravitreous injection.[27] Ganciclovir is 94-99% excreted unchanged in the urine. In renally impaired patients the serum half-life is prolonged therefore the dose must be adjusted. Approximately 40-50% of ganciclovir is removed from the serum by hemodialysis.[3-5,22]

Clinical Studies

There are numerous clinical studies that examine the efficacy of ganciclovir in the treatment of CMV retinitis. The majority of the studies are open-label trials of immunosuppressed patients treated under a compassionate-use protocol for life- or sight-threatening CMV disease.[8-28.]

In earlier studies, where patients received induction therapy of ganciclovir 2.5mg/kg every 8 hours or 5mg/kg every 12 hours for an average of three weeks, 78-100% showed either improvement or stabilization of their retinitis. However, within a month from completion of induction therapy, all of the patients relapsed.[8,11,14-16] Some investigators used "low-dose" maintenance therapy immediately following induction therapy, 2.5mg/kg two to five days per week, which still gave a 100%

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recurrence rate in previously controlled patients.[8,14,17]

Recent studies have shown that maintenance therapy of ganciclovir at a dose of 5mg/kg/day seven days per week or 6mg/kg/day five days per week immediately following induction therapy decreased the recurrence rate of CMV retinitis to 30-50%.[7-10,12,13,18-21,23] Orellana et al[10] studied the effect of maintenance therapy, 5mg/kg/day five to seven days per week, in 33 patients (50 CMV infected eyes). Progression of CMV retinitis was noted in 14 eyes (28%) within 23 days of starting maintenance therapy 5mg/kg/day five days per week. Relapse of CMV disease was noted in 21 (42%) eyes within 37 days of starting maintenance therapy 5mg/kg/day seven days per week.

Jabs et al[9] examined the effect of maintenance therapy, 6mg/kg/day five days per week, in 22 patients. Six patients (27%) relapsed within four to nine weeks of starting maintenance therapy. Patients who relapsed responded to a second course of induction therapy.

Buhles et al[7] treated 108 patients infected with CMV retinitis with ganciclovir induction therapy, 2.5mg/kg every eight hours or 5mg/kg every 12 hours, for 10-14 days. Ninety-one patients (84%) stabilized or improved. Twenty patients who did not receive maintenance therapy relapsed within a median of 47 days. Nine patients who received low dose maintenance therapy, 5mg/kg/day two to three days per week, also relapsed within a median of 47 days. However, 32 patients who received high dose maintenance therapy, 5mg/kg/day five to seven days/week, did not relapse until a median of 105 days.

Some studies have investigated the use of intravitreal ganciclovir which is not FDA approved. Intravitreal therapy, which has minimal systemic absorption, may be beneficial in patients who cannot tolerate intravenous therapy because of adverse reactions, drug interactions, or progression of disease while on intravenous ganciclovir therapy.[25-28]

Overall, in studies involving 21 patients, the intravitreal injections were well tolerated with minimal local effects (mild conjunctival scarring and scleral induration, small conjunctival hemorrhages, and foreign body sensation). However, one patient suffered a retinal detachment[25] and another suffered a case of staphylococcus epidermidis endophthalmitis[27] with this mode of administration. Most patients (80-100%) showed improvement or stabilization of their CMV retinitis with intravitreal injections of 200mcg (frequency of dosing for induction and maintenance therapy varied between studies). Relapse occurred more frequently in patients who did not receive maintenance therapy.[25,27]

Adverse Reactions

The most common adverse reactions associated with the use of intravenous ganciclovir are neutropenia (40%) and thrombocytopenia (20%). These effects are reversible when drug therapy is stopped. It is recommended that ganciclovir therapy not be initiated in patients with an absolute neutrophil count <500 cells /mm^3 or a platelet count <25,000/mm^3.[3]

Table 1
Induction Therapy[3]

Creatinine Clearance ($^{ml}/_{min}$)	*Dose (mg/kg)*	*Interval (hours)*
≥ 80	5.0	12
50-79	2.5	12
25-49	2.5	24
< 25	1.25	24

Less common adverse reactions associated with the intravenous administration of ganciclovir include: anemia (2%), eosinophilia (1%), elevated liver function tests (2-3%), nausea and vomiting (2%), confusion (1-3%), arrhythmias (1%), alopecia (1%), and retinal detachment (1%).[3]

Drug Interactions

When used concomitantly with zidovudine, ganciclovir increases the risk of hematologic toxicity including prolonged pancytopenia,[29] therefore, it is recommended that these two agents not be given together. There are reports of increased seizure activity occurring when Primaxin® (imipenem/cilistatin) and ganciclovir were given concomitantly.[3] When used concurrently with other immunosuppressive agents such as azathioprine, cyclosporine, and steroids, ganciclovir can cause excessive immunosuppression.[3] There is additive toxicity when ganciclovir is used concomitantly with drugs that inhibit the replication of rapidly dividing cells (ie, antineoplastic agents, dapsone, pentamidine, etc.) therefore resulting in inhibition of spermatogenesis, excessive depression of bone marrow, and atrophy and necrosis of the gastrointestinal mucosa.[3,4,11] These drugs should only be used concomitantly with ganciclovir if the benefits of therapy outweigh the risks. Finally, probenecid and other drugs which may inhibit renal tubular secretion or resorption may decrease the renal elimination of ganciclovir resulting in elevated serum drug levels.[3]

Dosage and Administration

Ganciclovir is cytotoxic and may be carcinogenic; therefore the guidelines for handling cytotoxic drugs should be followed when handling this agent. Because of its alkaline pH (9-11), ganciclovir should be given by intravenous infusion over one hour through a large peripheral or central vein. Ganciclovir should not be given

Table 2
Maintenance Therapy[3]

Creatinine Clearance $(^{ml}/_{min})$		Dose (mg/kg)	Interval (hours)
≥ 80		5.0	24
	or	6.0	5 days/week
50-79		2.5	24
	or	1.25	12
25-49		2.5	48
	or	1.25	24
< 25		1.25	48
	or	0.625	24

subcutaneously or intramuscularly. Local reactions at the site of injection include inflammation, pain, and phlebitis.

Ganciclovir is 94-99% excreted unchanged in the urine; therefore dosing is determined by the patient's renal function. Tables 1 and 2 list induction and maintenance dosing guidelines for ganciclovir based on renal function. Maintenance therapy should be continued for the duration of the patient's immunosuppression. However, this is often not possible, because of neutropenia and thrombocytopenia commonly caused by ganciclovir which requires cessation of therapy.[3] Patients who experience "break through" CMV disease while on maintenance therapy should be retreated with another course of induction therapy and then resume maintenance therapy.[3] Since 40-50% of ganciclovir is removed by hemodialysis, patients should receive their ganciclovir dose (not to exceed 1.25 mg/kg per 24 hours) after each hemodialysis procedure is completed.[3]

Conclusion

Ganciclovir is a virostatic agent used in the treatment of CMV retinitis. There are two phases of therapy, induction therapy and maintenance therapy. Open label trials have reported the successful suppression of CMV retinitis (78-100%) with induction therapy. The manufacturer recommends induction therapy 5mg/kg every 12 hours for 14-21 days and long term maintenance therapy 5-6mg/kg/day five to seven days per week. Although many patients relapse while on maintenance therapy (30-50%), the median time to relapse is delayed compared to that of patients who receive no maintenance therapy or "low dose" maintenance therapy (2.5mg/kg/day two to five days per week). Intravitreous ganciclovir therapy, which has minimal systemic absorption, is currently being investigated for use in patients who cannot tolerate intravenous therapy or in patients on intravenous therapy who still have progressive CMV retinitis. The safety and efficacy of ganciclovir in the treatment of other CMV infections is also currently being evaluated.

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Diagnosis and Management of Asymptomatic Primary Hyperparathyroidism

NATIONAL INSTITUTES OF HEALTH

Introduction

HYPERPARATHYROIDISM is increasingly being recognized as a result of the detection of hypercalcemia by widespread use of multiphasic screening. Women are affected twice as often as men, and the incidence of hyperparathyroidism increases with age. Approximately 100,000 new cases occur each year in the United States. Because the disease is now known to be more common than previously appreciated, physicians are increasingly interested in the correct diagnosis and proper management of patients with hyperparathyroidism.

The increased recognition of hyperparathyroidism by screening tests has disclosed a population of patients in whom symptoms are subtle or absent. A new clinical profile of hyperparathyroidism that is characterized by mild hypercalcemia has emerged. Presentation with bone disease that is evident on standard radiographs, nephrolithiasis, or other complications is now uncommon, yet it is not clear that incidentally discovered hyperparathyroidism is benign.

Studies of the natural history of hyperparathyroidism are yielding information about how often and over what time course the mild syndrome remains benign. Silent loss of bone mass and changes in skeletal architecture in this asymptomatic population are being assessed with sensitive new techniques. The clinical significance of changes in bone density is uncertain, but it seems likely that progressive parathyroid-dependent bone loss is an additional risk factor for fractures. The potential for mild hyperparathyroidism to cause or accelerate hypertension, renal deterioration, peptic ulcer disease, and psychiatric symptoms also is being evaluated.

Parathyroidectomy is a highly successful treatment when performed by experienced surgeons. As there is evidence that some patients with asymptomatic primary hyperparathyroidism may have a prolonged benign course, it is possible that such patients can be managed without operative intervention. If patients are not operated on, they must be monitored to detect progression of the disease. For these patients, the principal issue is how this can best be accomplished, balancing the need to identify skeletal, renal, or other complications that are indications for operation against the burdens and expense of long-term monitoring.

Evaluation of the long-term consequences of asymptomatic hyperparathyroidism with and without surgical treatment will answer questions about optimal management of this condition. Predictive factors, if they can be discerned, would help to distinguish subpopulations of patients who will develop adverse effects from those who tolerate mild hyperparathyroidism without complications. Identification of such factors would have a significant impact on the justification for operative or nonoperative management.

To address these issues, on 29-31 October 1990, the National Institute of Diabetes and Digestive and Kidney Diseases, together with the Office of Medical Applications of Research of the National Institutes of Health, convened a Consensus Development Conference on Diagnosis and Management of Asymptomatic Primary Hyperparathyroidism. Following a day and a half of presentations by experts in the relevant fields and discus-

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NIH Consensus Development Conferences are convened to evaluate available scientific information and to resolve safety and efficacy issues related to a biomedical technology. The resultant NIH Consensus Statements are intended to advance understanding of the technology or issue in question and to be useful to health professionals and the public.

NIH Consensus Statements are prepared by a nonadvocacy, nonfederal panel of experts based on (1) presentations by investigators, working in areas relevant to the consensus questions during a 1 ½-day public session; (2) questions and statements from consensus attendees during open discussion periods that are part of the public session; and (3) closed deliberations by the panel during the remainder of the second day and the morning of the third day. This statement is an independent report of the panel and is not a policy statement of the NIH or the federal government.

From the office of Medical Applications of Research, National Institutes of Health, Bethesda, MD.

sion from the audience, a consensus panel comprising specialists and generalists from the medical and other related scientific disciplines considered the evidence and formulated a consensus statement in response to the following six previously stated questions:

1. What is the most accurate, cost-effective method of diagnosing hyperparathyroidism?
2. Are there patients with asymptomatic hyperparathyroidism who can safely be followed? Should they be?
3. If not operated on, how should asymptomatic patients be monitored and managed?
4. What are the indications for surgery in patients with asymptomatic hyperparathyroidism?
5. What is the role of gland localization technology in management of patients with hyperparathyroidism?
6. What research should be done to clarify issues in diagnosis and management of hyperparathyroidism?

1. What Is the Most Accurate, Cost-Effective Method of Diagnosing Hyperparathyroidism?

The diagnosis of primary hyperparathyroidism (HPT) can best be established by demonstrating persistent hypercalcemia together with an elevated serum parathyroid hormone (PTH) concentration.

Measurement of total serum calcium concentration is a sensitive and cost-effective method for screening for primary HPT. When an elevated total serum calcium concentration is encountered, the clinician should first confirm this finding under conditions that minimize the likelihood of false positive values. The repeat blood sample should be obtained with minimal venous occlusion and preferably with the patient fasting. Drugs such as thiazide diuretics that can increase serum calcium concentration should be discontinued for several days.

Because small elevations in serum calcium may be clinically significant, clinicians should know the stated normal range for the laboratories used. Total calcium measurements may be misleading in patients with decreased serum albumin, a problem that can be resolved by the use of an ionized serum calcium determination.

Additional pertinent data may be available from multiphasic screening results. Low serum phosphorous, high chloride, low bicarbonate, and high alkaline phosphatase concentration are consistent with primary HPT but are not diagnostic; urea nitrogen and creatinine help in evaluating renal function.

Immunoassays for intact PTH using double antibody methods represent a major advance in diagnosis. The majority of patients with primary HPT have unequivocal elevations with these assays; the remainder have minimally elevated or high normal values. Patients with hypercalcemia due to other causes such as malignancy and sarcoidosis have low normal or suppressed PTH values. Because only rare instances of true ectopic secretion of PTH by malignant tumors have been reported, this possibility need only be considered in patients with elevated PTH and evidence of malignancy or in whom neck exploration for primary HPT is unsuccessful.

Borderline elevations or high normal values for intact PTH may be found in familial hypocalciuric hypercalcemia (FHH), an uncommon, benign condition in which neck exploration is contraindicated. In this syndrome, hypercalcemia often is detected at an early age and is associated with low urinary calcium excretion. Definitive diagnosis of FHH can be made by measuring serum and urine calcium in family members. Family studies also are important for detecting kindreds with multiple endocrine neoplasia (MEN) and familial HPT.

2. Are There Patients With Asymptomatic Hyperparathyroidism Who Can Safely Be Followed? Should They Be?

The consensus panel agrees that there may be a subgroup of patients with primary HPT that can be safely followed. All primary HPT patients should be considered candidates for surgery. Some uncomplicated asymptomatic patients, however, may be considered for judicious nonsurgical medical monitoring. To identify those patients who qualify for such management, physicians must have clear understanding of "asymptomatic" primary HPT and undertake a rigorous evaluation and selection process to identify candidates who can be followed without surgical therapy.

We use "asymptomatic primary HPT" to describe the clinical profile of patients with documented primary HPT without symptoms or signs commonly attributable to the disease. The patients are usually detected incidentally by multiphasic screening. Some patients may have one or several vague symptoms that cannot be definitively attributed to primary HPT but may instead be nonspecific or arise from a coexisting condition. Nevertheless, for purposes of this conference, such patients were considered "asymptomatic." In contrast, patients who present significant bone, renal, gastrointestinal or neuromuscular symptoms typical of primary HPT are defined as "symptomatic" and require surgery.

Our uncertainty regarding the natural history of asymptomatic primary HPT can be likened to the understanding of hypertension or hypercholesterolemia before large-scale epidemiological and clinical studies. There are no clinical signs or absolute laboratory criteria that can be used to identify patients who are likely to develop complications. Decisions regarding surgical or medical management must remain founded on clinical judgement on a case-by-case basis. The only acceptable treatment for these patients other than surgery is conscientious long-term medical surveillance.

Indications for Medical Monitoring

To qualify for nonsurgical management, a patient must have a serum calcium that is only mildly elevated, no previous episodes of life-threatening hypercalcemia, and normal renal and bone status.

Indications for Surgical Treatment

Conversely, some asymptomatic patients will have objective manifestations of primary HPT that are indications for surgery:

- Markedly elevated serum calcium.
- History of an episode of life-threatening hypercalcemia.
- Reduced creatinine clearance.
- Presence of kidney stone(s) detected by abdominal radiograph.
- Markedly elevated 24-hour urinary calcium excretion.
- Substantially reduced bone mass as determined by direct measurement.

The mean bone density often is below normal in patients with primary HPT. This diminished bone mass is most consistently observed at sites of cortical bone. Sparse long-term data are available regarding bone loss in asymptomatic primary HPT patients. Furthermore, no published data or study presented to the conference had the requisite power, in terms of numbers of patients or duration of follow-up, to compare fracture rates in patients with asymptomatic primary HPT to normals. Because low bone mass in postmenopausal women is associated with increased risk of fracture, we assumed that this relationship is likely to be valid in patients with primary HPT, although this assumption remains to be established.

The data were not sufficient to justify precise quantitative recommendations for surgery for any of the above listed tests. Nevertheless, panel members felt some examples should be offered as possible guidelines. The values mentioned below are ones which panel members perceived as warranting operation. It is clear, however, that many physicians will recommend operation for less prominent elevations than we cite below. Examples of values on which there was consensus regarding need for operation include serum calcium elevations 1 to 1.6 mg/dL (0.25 to 0.4 mmol/L) above the accepted normal range, i.e. 11.4 to 12 mg/dL (2.85 to 3.0 mmol/L), given a normal range of 8.8 to 10.4 mg/dL (2.2-2.6 mmol/L); creatinine clearance reduced by 30% compared with age-matched normals, confirmed 24-hour total urine calcium excretion > 400 mg, and bone mass more than two standard deviations below age-, gender-, and race-matched controls.

In addition, surgery is indicated in those patients in whom medical surveillance is neither desirable nor suitable:

- Patient requests surgery.
- Consistent follow-up is unlikely.
- Coexistent illness complicates management.
- Patient is young (< 50 years old).

Surgery is recommended for younger patients because the outcome of several decades of primary HPT is not known. In addition, for such patients, long-term compliance may be inadequate to ensure a safe outcome, and the cumulative expense and time invested in rigorous monitoring greatly outweigh the expense and time of an operation. Care should be taken to avoid surgery in FHH; in such patients, surgery is inappropriate.

Despite this outline for management, some patients will decline recommended surgery. They should be followed at least as intensively as uncomplicated asymptomatic patients in the manner described in the next section.

3. If Not Operated On, How Should Asymptomatic Patients Be Monitored and Managed?

Monitoring Procedures

When it is decided to follow a patient with asymptomatic hyperparathyroidism, the patient must understand that decision to forgo parathyroid surgery is considered safe only if the patient and the physician remain committed to conscientious long-term monitoring. The goals of such follow-up include the early recognition of worsening hypercalcemia, the deterioration of bone, renal impairment, or the appearance or growth of renal stones.

The patient should be seen at least semiannually until the lack of progression of the disease has been established. Once stability of the various parameters has been established over one to three years, the intervals between these various observations can be safely extended. The patient should be specifically queried regarding neuromuscular weakness, depression, and symptoms related to the skeletal, gastrointestinal, and renal systems, and the following determinations are recommended at each visit:

- Blood pressure.
- Serum calcium.
- Serum creatinine and creatinine clearance.

In addition, we recommend the following:

- Abdominal radiographs annually.
- 24-hour urinary calcium in selected patients.
- Repeat bone mass measurement after 1 to 2 years.

The panel suggests that a second determination of bone mass be sought after an interval of time that is adequate to assess whether there has been significant loss of bone. The appropriate interval will depend on the precision of the instrument available. It is acknowledged that there is inadequate information identifying the ideal methodology for monitoring changes in bone mass in patients with asymptomatic HPT. There is some indication that measurement of the forearm bone density with single photon absorptiometry may be useful to monitor changes in bone density. The development of alternative densitometric methodology such as dual energy x-ray absorptiometry may soon become preferable to identify subtle changes in cortical bone. Although a recommendation for a change to surgical therapy can be made solely on the basis of an abnormally low value of bone density, such a decision remains controversial in asymptomatic HPT.

Management During Surveillance

There are certain aspects of management that should be advised for all patients being followed; the patients should avoid dehydration, immobilization, and a diet with restricted or excess calcium. Loop or thiazide diuretics should be used with caution. Because of the risk of a hypercalcemic crisis, patients should be advised to seek immediate medical care with the appearance of a medical illness that may produce dehydration (e.g., vomiting, diarrhea, etc.). There should be adequate treatment of hypertension, even when it is mild.

Many physicians prescribe estrogen therapy for postmenopausal women, because of the beneficial actions of estrogens on postmenopausal osteoporosis and cardiovascular risk factors. While there is evidence that estrogen therapy can reduce the action of PTH on bone and lower serum calcium without causing PTH levels to rise, there are limited data on long-term therapy with estrogens in postmenopausal patients with asymptomatic hyperparathyroidism.

Other drugs such as the bisphosphonates, oral phosphate, calcitonin, or mithramycin, which modify the PTH-induced stimulation of bone resorption are not presently indicated in patients with asymptomatic HPT. However, bisphosphonates or oral phosphate may be considered in the rare patient with symptomatic hyperparathyroidism who is not a surgical candidate because of severe concurrent diseases.

4. What Are the Indications for Surgery in Patients With Asymptomatic Hyperparathyroidism?

During monitoring of asymptomatic patients, the following developments may warrant consideration for operative intervention:

- Typical parathyroid-related symptoms involving the skeletal, renal, or gastrointestinal systems.
- Sustained increase in serum calcium of greater than 1.0 to 1.6 mg/dL (0.25-0.4 mmol/L) above the normal range.
- Significant decline in renal function.
- Nephrolithiasis or worsening calciuria.
- Significant decline in bone mass.
- Significant neuromuscular or psychologic symptoms without other obvious cause.
- The inability or unwillingness of the patient to continue under medical supervision.

In addition to the absolute level of serum calcium, clinicians need to take into account the magnitude of the change over time.

Assessment of renal function should be made by measurement of creatinine clearance. Although the panel could not define precise values, a confirmed decrease of more than 30% was considered significant.

The significance of declining bone mass is controversial and a decrease to two standard deviations below the mean for age-, sex-, and race-matched controls was considered sufficient to warrant operation, as already discussed.

The relationship of psychologic symptoms to hyperparathyroidism is uncertain. All investigators have suggested that neuromuscular symptoms are frequent and often reversed by successful parathyroidectomy while other less specific somatic symptoms are rarely improved by operation.

5. What is the Role of Gland Localization Technology in Management of Patients With Hyperparathyroidism?

Imaging of the parathyroid glands before an initial neck exploration is not necessary.

In the past four years, extensive experience has been acquired in nonoperative methods for localization of abnormal parathyroid glands. Both noninvasive methods (ultrasound, computed tomography, thallium-technetium scanning, magnetic resonance imaging) and invasive methods (arteriography, venous sampling, needle aspiration) are available. Such methods may be useful when a previous operation has failed. However, because of their potential risks, invasive imaging techniques should never be employed before a first neck exploration.

The use of noninvasive imaging procedures before a first operation is controversial. Some surgeons never use these techniques, while others find them helpful in planning the sequence of an operation. The usefulness of all noninvasive imaging methods is diminished by their unreliability (about 15% false positives and only 60% true positives). By comparison, operative exploration of the neck by experienced surgeons has a demonstrated success rate of 95%. There is no evidence that preoperative imaging can significantly improve surgical therapy by: (1) shortening the time of operation or decreasing its cost, (2) decreasing complications of an operation, or (3) preventing failed operations. The results of imaging studies should seldom, if ever, be used as the basis of selecting patients for operative or nonoperative management.

6. What Research Should Be Done to Clarify Issues in Diagnosis amd Management of Hyperparathyroidism?

Ultimately, the ability to predict outcomes in asymptomatic HPT and decide on operative versus nonoperative management will require a multicenter, randomized, controlled trial of sufficient size and duration to assess the long-term incidence and progression of complications. However, many specific issues were identified during the conference that need to be resolved before such a trial can be designed. In particular, it is important to define the neuromuscular, psychological, cardiovascular, and gastrointestinal effects of primary HPT. The effects of asymptomatic HPT on bone mass and structure are being defined in ongoing studies, but effects on bone strength and susceptibiltiy to fracture also should be addressed.

The case-control method might be a feasible initial approach. Objective analysis could be carried out in patients with HPT before and after surgery and in carefully matched controls undergoing other elective surgical procedures such as thyroidectomy. Epidemiologic studies using existing databases such as the National Health and Nutrition Examination Survey might identify conditions associated with primary HPT because the majority of subjects identified with hypercalcemia would have HPT. In addition, it may be desirable to organize and collect available data on fracture, change in bone mass and histomorphometry, and other complications from patients currently being followed in specialized centers.

A preliminary clinical trial comparing bone mass outcomes and biochemical measures of bone turnover in postmenopausal women with HPT randomly assigned to estrogen plus surgery versus estrogen alone for a limited time might establish feasibiltiy and provide guidance for the design of a large multicenter trial. Such a trial would permit analysis of the effects of HPT without the confounding effects of estrogen deficiency yet provide access to the patient population with the highest incidence of HPT.

Basic studies are needed on the etiology of hyperparathyroidism and its molecular and cellular pathophysiology. Identification of the gene locus on the long arm of chromosome 11 for the MEN I gene, discovery of reciprocal translocations in parathyroid adenomas involving the parathyroid hormone gene, and evidence for deletions of one or both copies of the MEN I gene in hyperplasia and adenomas (suggesting the MEN I gene is an antioncogene) all provide an exciting opportunity to explore abnormal parathyroid function. Insight into pathogenesis and complications also could be achieved by developing animal models of hyperparathyroidism.

Recent clinical studies using calcitriol and its analogs to treat secondary hyperparathyroidism suggest that parathyroid gland function may be controlled pharmacologically. Development of antagonists of PTH synthesis, secretion, and end organ effect would substantially increase therapeutic options for HPT and influence the design of clinical trials.

Conclusions and Recommendations

- The diagnosis of primary HPT is established by demonstrating persistent hypercalcemia together with an elevated serum parathyroid hormone concentration.
- Current and acceptable treatment following the diagnosis of primary HPT is operative intervention for cure.
- The diagnosis of primary HPT in the asymptomatic patient, however, does not in all cases mandate referral for imminent operative intervention; conscientious surveillance may be justified in patients whose calcium levels are only mildly elevated and whose renal and bone status are close to normal.
- During the long-term medical and nonoperative follow-up of these patients, a schedule of monitoring has been devised with assessment of specific symptoms, biochemical parameters, and measurement of bone mineral content. Management guidelines are devised to minimize the risk of deterioration of renal, skeletal, or gastrointestinal complications of HPT.
- Changes that may warrant operative intervention during monitoring include rising serum calcium, deterioration of renal function, decline in bone mass, and onset of parathyroid-related symptoms.
- Preoperative localization in patients without prior neck operation is rarely indicated and not proven to be cost effective.
- A randomized multicenter clinical trial is needed to compare operative versus nonoperative management of asymptomatic HPT. Pilot studies would be useful to define the multisystem effects of HPT. Further basic research is required to understand the pathogenesis and develop pharmacologic therapy for HPT.

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Guidelines for the Appropriate Use of Do-Not-Resuscitate Orders

AMA COUNCIL ON ETHICAL AND JUDICIAL AFFAIRS

Cardiopulmonary resuscitation (CPR) is routinely performed on hospitalized patients who suffer cardiac or respiratory arrest. Consent to administer CPR is presumed since the patient is incapable at the moment of arrest of communicating his or her treatment preference, and failure to act immediately is certain to result in the patient's death. Two exceptions to the presumption favoring CPR have been recognized, however. First, a patient may express in advance his or her preference that CPR be withheld. If the patient is incapable of expressing a preference, the decision to forgo resuscitation may be made by the patient's family or other surrogate decision maker. Second, CPR may be withheld if, in the judgment of the treating physician, an attempt to resuscitate the patient would be futile. In December 1987, the American Medical Association's Council on Ethical and Judicial Affairs issued a series of guidelines to assist hospital medical staffs in formulating appropriate resuscitation policies. The Council's position on the appropriate use of CPR and do-not-resuscitate orders is updated in this report.

CLOSED-CHEST cardiac massage was first described in 1960 as a means of restoring circulation in victims of cardiac arrest.[1] Kouwenhoven and his colleagues[1] successfully used external chest compressions, both alone and in conjunction with artificial ventilation, to resuscitate 20 patients in whom cardiac arrest had occurred. In the years immediately following the development of this life-sustaining technique, cardiopulmonary resuscitation (CPR) was administered primarily to otherwise healthy individuals who experienced cardiac or respiratory arrest during surgery or as a result of near-drowning.[2] Today, however, it is widely recognized that CPR can be attempted on any individual who experiences a cessation of cardiac or respiratory function. Since such events are inevitable as part of the dying process, CPR potentially can be used on every individual prior to death.

In health care settings, CPR is viewed as an emergency procedure that is routinely administered to patients who experience cardiopulmonary arrest. Most health care institutions employ specialized teams of trained personnel to promptly administer CPR when an arrest is detected in a patient. As with other emergency procedures, consent to administer CPR is presumed since the patient is incapable at the moment of arrest of communicating his or her treatment preference, and failure to render immediate care is certain to result in the patient's death.

The frequent performance of CPR on patients who are terminally ill or who have little chance of surviving for more than a brief period of time has prompted concern that resuscitation efforts may be employed too broadly.

Incidence and Success Rates for CPR

Studies suggest that CPR is attempted in approximately one third of the 2 million patient deaths that occur in United States hospitals each year.[3] The proportion of these attempts that are considered successful ultimately depends on the received objectives of CPR. For example, success rates will vary significantly depending on whether the goal of CPR is viewed as the restoration of cardiopulmonary function, or, alternatively, the survival of the patient until discharge from the hospital.

Of the patients who receive CPR, one third survive the resuscitation effort, and one third of these individuals, in turn, survive until discharge from the hospital.[3] A review of 13,266 cases reported in the medical literature between 1960 and 1980 revealed that 39% of hospitalized patients who received CPR initially survived the procedure, and

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From the Council on Ethical and Judicial Affairs, American Medical Association, Chicago, Ill.

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17% survived until they were discharged from the hospital.[4] A similar review, conducted for 12,961 cases in which CPR was attempted, found that 38.5% of the patients survived at least 24 hours and 14.6% of the patients survived until discharge.[5] Longer periods of survival have not been evaluated as extensively. However, one study found that, of patients who survived until discharge from the hospital, 80% were still alive six months later.[6]

The outcome of CPR is dependent on the nature and severity of the patient's underlying illness prior to cardiopulmonary arrest. In a study of 294 patients who were resuscitated in a Boston, Mass, hospital, none of the patients with metastatic cancer, sepsis, pneumonia, or acute stroke accompanied by neurologic deficit survived until discharge from the hospital.[7] Among patients with renal failure, only 2% survived until discharge. In addition, none of the survivors had a cardiopulmonary arrest that lasted longer than 30 minutes. A study of 329 veterans who received CPR produced similar results.[8] Of the 63 patients with metastatic cancer, 37% survived initial resuscitation; none survived until discharge. Of 73 patients with a diagnosis of sepsis, 45% survived the initial resuscitation effort, but only one of the 73 patients survived until discharge from the hospital. A recent review of the literature found that low survival rates were consistently associated with several underlying conditions, including malignant diseases, neurologic disease, renal failure, respiratory failure, sepsis, and multiple organ failure.[9] Patients who survive initial resuscitation but die before discharge from the hospital almost always spend the days or weeks immediately preceding their death in an intensive care unit, generally as the recipients of invasive therapies and monitoring techniques.[10] One study found that 78% of the patients who were admitted to an intensive care unit after cardiac arrest received invasive interventions.[10] In addition, at least one study has suggested that approximately 11% of patients who survive initial resuscitation will undergo CPR at least one other time during their hospital stay.[4]

However, the recipients of CPR who survive past the time of discharge generally do so without severe impairment. One study found the 93% of such patients were alert and oriented on leaving the hospital.[7] Gross impairment of mental status was reported in only one of 41 survivors. All of the patients in the study, however, reported a decrease in functional status following the administration of CPR. For most patients, this change in activity was due to fear of another cardiac arrest, rather than underlying pathologic causes.

Despite the widespread use of CPR on hospitalized patients, two exceptions to the presumption that favors the administration of CPR have been recognized. First, patient preferences regarding the use of CPR may be expressed in advance of cardiopulmonary arrest. Second, resuscitation should not be attempted if, in the judgment of the treating physician, the procedure would be futile.

Patient Preferences as a Basis for Withholding CPR

It is widely acknowledged that patients have the right to refuse medical treatment, even when such refusal is likely to result in serious injury or death. A patient, therefore, may express in advance his or her preference that CPR be withheld in the event of cardiac arrest. Such refusal may serve as the basis for a do-not-resuscitate (DNR) order. A decision to withhold CPR from an incompetent patient can be made by a surrogate decision maker, based on the previously expressed preferences of the patient or, if such preferences are unknown, in accordance with the patient's best interests.

DNR orders, at least in theory, facilitate autonomous action by permitting patients to express their preferences regarding the use of life-prolonging treatment at a time when they are capable of making informed decisions. Physicians and others generally agree that patients should participate in decisions regarding the use of resuscitation. One study found that 93% of the 151 physicians surveyed believed that patients should be involved in making decisions about CPR.[6] However, only 10% of these physicians actually discussed resuscitation preferences with their patients prior to cardiac arrest.[6] These findings are not inconsistent with data obtained from similar studies. Research consistently has shown that only 20% of hospitalized patients with DNR orders discussed their resuscitation preferences with a physician prior to implementation of the order.[6,11,12]

These data are cause for concern, given the frequent use of DNR orders. A study of 244 inpatient deaths at a community teaching hospital revealed that 68% of the patients who died had a DNR order recorded in their chart at the time of their death.[13] Similar studies have found that up to 70% of patients who die in a hospital have a DNR order recorded on their chart,[14-16] and that 3% to 4% of all inpatients have such an order at some point during their hospital stay.[14,15,17]

In practice, physicians and patients alike may find it difficult to engage in discussions about the possibility of patient death, particularly in the early stages of hospitalizations. As the need for such discussion becomes evident, the patient no longer may be capable of participating in the decision-making process. This dilemma is illustrated by the results of a study of 389 patients who had a DNR order recorded in their chart at the time of their cardiopulmonary arrest. The study found that 76% of the 389 patients were mentally impaired at the time the DNR order was discussed, and therefore were incapable of indicating a treatment preference. However, only 11% of these patients were mentally impaired at the time of admission to the hospital.[11]

Even when patients are capable of making decisions regarding resuscitation, studies have shown that they may not be actively involved in discussions about DNR orders. One such study found, for example, that 13 of 72 decisions not to employ resuscitation were discussed with the family, rather than with the patient, despite the physician's perception that the patient was capable of making an informed decision.[18] Similar studies have produced conflicting evidence, however, suggesting the decisions regarding resuscitation are discussed with members of the patient's family in as few as 33% or as many as 86% of cases, depending on the study.[6,11,12]

Despite these findings, evidence suggests that most patients wish to discuss their preferences about resuscitation with their physicians. Sixty-eight percent of the respondents in one survey indicated a desire to discuss the use of life-sustaining treatment with their physicians, but only 6% had been afforded an opportunity to do so.[19] In a similar study, 16% of the 200 patients interviewed had discussed the use of life-prolonging medical treatment with their physicians. An additional 47% wished to participate in such discussions, but had not actually done so.[20] Interestingly, 37% of the 200 patients who participated in this survey did not wish to discuss with their physicians the use of life-prolonging measures. Clearly, patients, as well as physicians, may be reluctant to engage in discussions about the possibility of the patient's death or the likelihood of achieving a poor medical outcome.

The lack of patient participation in decisions about DNR orders is disturbing. An absence of patient involvement may result in mistaken impressions about the medical procedures employed during resuscitation efforts and the probable outcome of CPR, or may result in the implementation of decisions that are not in accord with the patient's values and preferences. Studies suggest that decisions made by families and physicians often fail to correspond with the choices that would have been made by the patient. One such study attempted to compare the resuscitation preferences of 25 patients who survived CPR with the decisions that their physicians thought they were most likely to make. Eight of these patients would have refused the use of resuscitation and did not wish to undergo CPR in the future. However, only one of 16 physicians accurately perceived their patients' wishes.[6] A similar study found that physicians are no more accurate in predicting the resuscitation preferences of patients than would be expected by chance alone.[21] In addition, evidence suggests that physicians may tend to perceive a patient's quality of life more negatively than does the patient.[22]

Futility as a Basis for Withholding CPR

The second exception to the presumption favoring CPR is applicable to cases in which an attempt to resuscitate the patient would be futile in the judgment of the treating physician. A physician is not ethically obligated to make a specific diagnostic or therapeutic procedure available to a patient, even on specific request, if the use of such a procedure would be futile.[23-25] However, judgments of futility are subject to a wide variety of interpretations. The potential impact of this variability is profound, given recent evidence that perhaps as many as 88% of all DNR orders are based in part on the physician's judgment that resuscitation of the patient would be futile.[26]

Evidence suggests that terms such as *futility*, when used by physicians to express the probability of achieving a specified outcome, have a variety of potential meanings that are understood differently by different physicians. The extent of such variability has been demonstrated by studies that examine how health care professionals, in comparison with colleagues and nonhealth professionals, quantify verbal modifiers used to express probabilities or frequencies (eg, rare, atypical, common, infrequent). In one of these studies, 22 terms were converted by study participants into numerical percentages. For example, participants described the term *rare* as an event that is likely to occur in less than 10% of cases. The findings from the study revealed that the interpretations attached to 17 of the 22 expressions varied too widely among individuals to ensure that the intended meaning was effectively communicated.[27]

Like these verbal expressions of frequency, the term *futility* does not express a discrete and identifiable quantity, but rather encompasses a range of probabilities and is likely to be interpreted in different ways by different physicians.[28(p1282)] It has been noted, for example, that some physicians describe a medical treatment as futile only if the possibility of success approaches 0%, whereas others associate futility with success rates as high as 13%.[25] The meaning intended by the term *futility*, therefore, may vary among physicians when the expression is used to indicate the probability that a specified outcome will occur.

Determinations of futility also may vary from one physician to another based on the perceived objectives of medical treatment and the criteria that are used to evaluate outcome. For example, in a purely physiological sense, the objective of CPR is to restore cardiac and respiratory function to patients who experience cardiopulmonary arrest.[29] CPR, under such a scenario, is considered a success if the patient survives the initial resuscitation effort. Conversely, an attempt to resuscitate the patient is considered futile in the absence of a reasonable potential of restoring these vital functions.

The successful application of CPR also has been gauged by criteria that relate to the length of patient survival. Such criteria include, for example, survival for at least 24 hours following initial resuscitation, survival until discharge from the hospital, and survival for some other time frame (typically one month to one year after cardiac arrest).[10] Using this definition of successful treatment, a judgment of futility is warranted if CPR is unlikely to prolong the life of the patient for the period of time set forth in the criteria. The presumption is that survival for a shorter time period would not be of value to the patient.

This approach to defining futility replaces a medical assessment (ie, whether a reasonable potential exists for restoring cardiopulmonary function to the patient) with a nonmedical value judgment that is made by the treating physician (ie, whether one day, one week, or one month of survival by the patient—perhaps in a severely debilitated state—is of value to him or her). This interpretation of futility is inconsistent with the principle of patient autonomy, which requires that patients be permitted to choose from among available treatment alternatives that are appropriate for their condition, particularly when such choices are likely to be influenced by personal values and priorities.

Similar obstacles to patient autonomy are encountered when the success of CPR is judged by its ability to benefit the patient in a manner that is viewed as appropriate by the treating physician or by others. Judgments of futility, in such circumstances, are rendered if the specific benefits that are desired for the patient are not likely to be achieved. Examples of some benefits that have been described as appropriate indications for CPR are a "meaningful existence" after resuscitation or an acceptable quality of life for the patient. These determinations, which attempt to define the types of treatment and the qualities of existence that constitute a benefit for the patient, undermine patient autonomy because they are based on the value judgments of someone other than the patient.

These judgments of futility are appropriate only if the patient is the one to determine what is or is not of benefit, in keeping with his or her personal values and priorities. Patients, therefore, should be encouraged to discuss with their physicians the expected benefits and objectives of medical treatment and to engage in an ongoing dialogue regarding the potential for achieving these goals. Once the objectives of the patient have been clearly expressed, the physician can determine and convey to the patient whether CPR or other medical treatments are likely to be effective in helping to achieve those goals. Resuscitative efforts, under such circumstances, would be considered futile if they could not be expected to achieve the goals expressed by the informed patient. This definition of futility not only respects the autonomy and value judgments of individual patients, but also allows for the professional judgment and guidance of physicians who render care to the patient.

These various interpretations of futility have important implications for the use of DNR orders. In the unusual circumstances when efforts to resuscitate a patient are judged by the treating physician to be futile, *even if previously requested by the patient*, CPR may be withheld. In such circumstances, when there is adequate time to do so, the physician should inform the patient, or the incompetent patient's surrogate, of the content of the DNR order, as well as the basis for its implementation, prior to entering a DNR order into a patient's record.[30(p1296)] The physician also should be prepared to discuss appropriate alternatives, such as obtaining a second opinion or arranging for transfer of care to another physician.

Guidelines for the Appropriate Use of DNR Orders

In order to provide assistance to physicians in managing the care of patients for whom CPR may not be appropriate, the Council on Ethical and Judicial Affairs has updated its resuscitation guidelines as follows:

- Efforts should be made to resuscitate patients who suffer cardiac or respiratory arrest except when circumstances indicate that administration of CPR would be futile or not in accord with the desires or best interests of the patient.
- Physicians should discuss with appropriate patients the possibility of cardiopulmonary arrest. Patients who are at risk of cardiac or respiratory failure should be encouraged to express, in advance, their preferences regarding the use of CPR. These discussions should include a description of the procedures encompassed by CPR and, when possible, should occur in an outpatient setting when general treatment preferences are discussed, or as early as possible during hospitalization, when the patient is likely to be mentally alert. Early discussions that occur on a nonemergent basis help to ensure the patient's active participation in the decision-making process. In addition, subsequent discussions are desirable, on a periodic basis, to allow for changes in the patient's circumstances or in available treatment alternatives that may alter the patient's preferences.
- If a patient is incapable of rendering a decision regarding the use of CPR, a decision may be made by a surrogate decision maker, based on the previously expressed preferences of the patient or, if such preferences are unknown, in accordance with the patient's best interest.
- The physician has an ethical obligation to honor the resuscitation preferences expressed by the patient or the patient's surrogate. Physicians should not permit their personal value judgment about quality of life to obstruct the implementation of a patient's or surrogate's preferences regarding the use of CPR. However, if, in the judgment of the treating physician, CPR would be futile, the treating physician may

enter a DNR order into the patient's record. When there is adequate time to do so, the physician must first inform the patient, or the incompetent patient's surrogate, of the content of the DNR order, as well as the basis for its implementation. The physician also should be prepared to discuss appropriate alternatives, such as obtaining a second opinion or arranging for transfer of care to another physician.

- Resuscitative efforts should be considered futile if they cannot be expected either to restore cardiac or respiratory function to the patient or to achieve the expressed goals of the informed patient.
- DNR orders, as well as the basis for their implementation, should be entered by the attending physician in the patient's medical record.
- DNR orders only preclude resuscitation efforts in the event of cardiopulmonary arrest and should not influence other therapeutic interventions that may be appropriate for the patient.
- Hospital medical staffs should periodically review their experience with DNR orders, revise their DNR policies as appropriate, and educate physicians regarding their proper role in the decision-making process for DNR orders.

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HELPFUL HINTS

Post-Op

E. TREMAIN BRADLEY, M.D.

IN the postoperative care of a patient, a number of little things can make a lot of difference in his recovery, comfort, and general well being.

Right on the operating table, for instance, if dressings need to be held on with adhesive tape, tension on the skin should be avoided, or at least the skin should be prepared with a coating, eg, benzoin. Then with drapes removed, the ankles should be firmly flexed and released about six times at five second intervals to expel from the extremities the venous blood which has puddled there during the operation. This maneuver should be repeated periodically in the recovery room.

When moving the patient from operating table to stretcher and again into bed, the sheet underneath him helps keep the body in line, but an added precaution is to reach across the stretcher and put both hands on the table (or bed) to eliminate any possibility of his slipping down between the two surfaces.

In the recovery room the ankles are again flexed. And as soon as the patient reacts, he is encouraged to take a *very* deep breath several times to aerate those alveoli which lay quiet during surgery. If this stimulates coughing, support of incisions in the abdomen or thorax with a many-tailed or Velcro binder (or towel or sheet) will reduce pain and permit more effective coughing and reduce the risk of atelectasis.

An endotracheal tube, which prevents speaking, is very disturbing and calls for gentle, sympathetic explaining. At some point the patient can be given something to write on, relieving his frustration.

Nasogastric tubes are uncomfortable, annoying. Let's be sure they are effective. If a little fluid runs in by gravity, patency is assured, but does mild suction pull fluid out? What then is the harm, when with mouth dry and sticky, and the patient asks for water, in allowing a sip or two? It will be sucked right out. Even with no tube present, even following an esophageal anastomosis, what will a few sips of water or warm tea do? The suture line is being bathed with bacteria-laden tenacious swallowed saliva. Why not rinse it off and leave it clean and healthy? I have found no trouble from doing this.

Rather routinely patients are kept on their backs. But some are eager to turn on the side. Actually it is easier to cough — and to make the cough more effective by timed pounding of the back — when he lies on his side. It can even help splint a thoracic incision. Especially for a vomiting patient, care is much easier in the lateral position. So unless there is a real contraindication because of some surgical procedure, why not accede to his request, even help him to turn?

Most patients will void when ready. Urging tends to inhibit urination and make the patient tense. Try reassurance, helping him overcome his inhibitions, and even standing at the bedside if feasible. Catheterization should be avoided unless absolutely necessary, bladder surgery excepted.

If intravenous infusions are indicated postoperatively, what should be their content? Following abdominal surgery intestinal function tends to be diminished, but good bowel tone can be improved with the administration of salt. Yet in cardiac patients a problem arises, for cardiologists have urged me not to give saline. One must balance the risk of ileus and lethal gaseous distension against a temporary increase in circulating sodium, so some sodium may be necessary despite the cardiac restriction. The addition of potassium chloride to the infusion may seem indicated. However, it may be wise to go slow, adding it for several days, perhaps erring on giving too little. Later it is easier to add than to take away!

Back in his room with the vertical foot board in place, a slight elevation of the head gatch helps leg muscle metabolism and return venous flow. Having been instructed in operating the power-driven functions of the bed, he should be advised not to raise the knee gatch very high; that impedes venous return.

Diet: In treating emesis of the first trimester of pregnancy, we learned that fluids, especially citrus and coffee, tended to promote vomiting. Drink it down; up it comes. I call it "belly wash." Something dry, saltine crackers if available, seems to soak up the gastric secretions. Hot cereal often sits well. Be sure the diet kitchen doesn't send up its routine days meal, such as gravy, pea soup, etc. Ask the dietician for simple, bland, but not tasteless food. Have her discuss the menu with the patient. I have found that patients after gall bladder surgery could within a fairly short time begin to tolerate small amounts of fat — preferably dairy fats — every day or two. A patient may eat better if his meat is cut for him.

If he has a colostomy, the cup or bag covering it for the collection of feces should be placed snugly against the mucus membrane from below and from the side so that any exposed skin will be least likely to be soiled. An excellent protection of skin from feces, pancreatic drainage, etc., is aluminum powder, applied to clean, dry skin and then worked in by wiggling (not rubbing) a cotton ball over it, moving from place to place.

Passing flatus is difficult while lying in bed on one's back. Let the patient turn on his side, or get out of bed to stand or walk. Good to be up and walk a few steps anyway. If afraid he may soil, reassure him that messing the bed or floor is better than soiling the peritoneum — and less work for every one.

Be sure to leave the bedside table with the things he wants on it, and the call bell, both within reach.

E. TREMAIN BRADLEY, M.D., solo practice of General Surgery, retired to Norfolk, Conn.

Editorial

Guest Editorial

Addictophobia

As a result of lobbying and advocating for decent treatment of addicts over the past few years, I have perceived impediments to the rational handling of the problems of legal and illegal drug use that are detrimental to our suffering neighbors who use them. Both the lay public and many health care professionals as well, are beset by exaggerated fear of addiction and addicts. This neurotic disorder, addictophobia, has been fostered by current public policy in which addiction-as-crime is the popular mindset. The "WAR" against drugs with its connotation of harsh brutality, injury, and death has been widely and persistently promoted by political institutions and the media. No wonder we fear and loath addicts and the drugs they use.

The insurance industry is willingly buying into this attitude, denying payment for treatment for the chemically dependent whenever that possibility arises in order to improve the bottom line. Despite the fact that as many as 25% of hospital admissions overall and an even greater percentage of trauma victims have definable drug or alcohol related problems, physicians generally have scant knowledge of the neuropharmacology of commonly used psychoactive agents and display little interest in the acquisition of vital information about them. The diagnosis is frequently missed, ignored, or left unrecorded and a signal opportunity to refer the drug user for appropriate diagnosis and treatment is lost. This is most certainly not top quality care.

In the face of mounting evidence that compulsive use of psychoactive drugs has its origins in cellular and molecular changes in neurons, thus confirming that addiction is a bona fide neurological illness, it is dismaying that many health professionals continue to believe that the phenomenon of addictive behavior is a moral lapse deserving of repression and incarceration as therapy. The evidence pointing to physiologic alteration of neuroreceptor-transmitter ligands by addictive chemicals must lead us, as scientists, to discard our bias and archaic preconceptions regarding this disease and fight chemical dependency as we have fought cancer and heart disease with dedication, intelligence, and compassion.

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The HIV/AIDS Epidemic: The First 10 Years

On June 5, 1981, the first cases of an illness subsequently defined as acquired immunodeficiency syndrome (AIDS) were reported by health-care providers in California and CDC.[1] As of May 31, 1991, state and local health departments had reported to CDC 179,136 AIDS cases among persons of all ages in the United States. By the end of 1991, AIDS will be the second leading cause of death among men 25-44 years of age and is likely to be one of the five leading causes of death among women aged 15-44 years in the United States.[2]

The World Health Organization estimates that 8-10 million adults and 1 million children worldwide are infected with human immunodeficiency virus (HIV), the etiologic agent of AIDS. By the year 2000, 40 million persons may be infected with HIV.[3] More than 90% of these persons will reside in developing countries in sub-Saharan Africa, South and Southeast Asia, Latin America, and the Caribbean. In addition, during the 1990s, mothers or both parents of more than 10 million children will have died from HIV infection/AIDS.

AIDS will remain a major public health challenge worldwide in the 21st century. Education of all persons about AIDS to prevent transmission of HIV infection is critical to controlling this problem.

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Reported by: Technical Activity, Div of HIV/AIDS, Center for Infectious Diseases, CDC.

—Morbidity and Mortality Weekly Report, Vol 40, June 7, 1991

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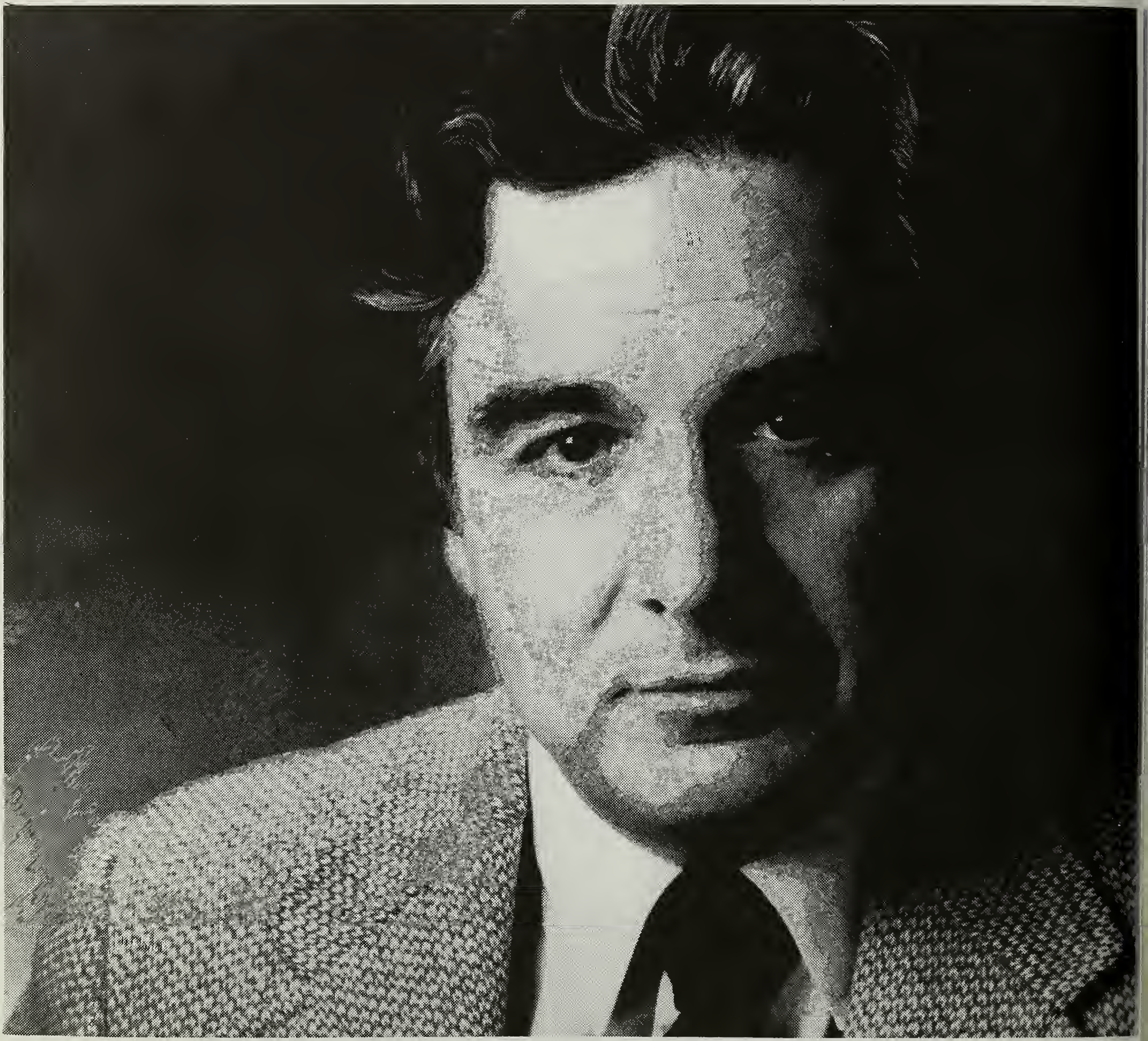

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Three Goals for the Coming Year

I am honored that you have entrusted me with this position as your president. I hope in this coming year to keep a steady course for Connecticut medicine and to navigate through the many hazards in our way. As I have built up to this moment, I have reflected on the many concerns of physicians, both in our state and, indeed, in the whole of America. Many issues have come to mind, but as my term is limited to one year, I would like to focus my attention on three major issues.

First, when I look at us, fellow physicians, I see that we are saving lives and lessening suffering, right, left, and center, but we seem unable to save ourselves. We are a group divided that is currently being splintered further by the government, the insurance industry, and by our patients. Divided like this we will definitely fail. When Congress held a hearing on Medicare and the Resource-Based Relative Value Scale, better known as the RBRVS, 29 different lobbyists representing all the different specialty groups showed up and pleaded for their individual, special interest groups. These organizations that we all belong to are in place to educate us, to set a standard in our specialty and to keep us up to date on technological developments in our fields of expertise. By their "ME ONLY" attitude that they convey in Washington they are dividing us. Somehow, we the physicians of Connecticut must form a united front to deal with the bureaucracies which seem to be taking over the medical profession. To me, the obvious way is to have the total commitment of Connecticut physicians to the Connecticut State Medical Society; WE MUST ACT AS ONE; and the nonjoiners like some of the academicians or the physicians employed by industry or insurance companies and hospitals must join us and stop being our adversaries. Nationally, we must all get behind Jim Todd and the AMA so that we speak with one voice when the delivery of medical care and economics are discussed. I hope to find ways to unite us so that we can stand tall and proud.

My second project involves Medicare. This started in 1965 as the thin edge of a wedge that continues to dig deeper into medicine and is being followed by the insurance industry, the HMOs, and indeed by our patients and big business. The people of America do not understand what Medicare is doing to the practicing physicians. Many of you, my colleagues, do not understand how Medicare is leading gradually to the nationalization of medicine in this country. The fact is that Medicare is discount medicine that is being paid for by the physicians and the working public. I will endeavor to educate the public — young and old to the facts. Let me give you two examples. The majority of Medicare fees are frozen at the 1984 level or lower. However, all overhead costs continue to increase yearly with inflation. The new codes which have replaced the MAACs do not even cover many physicians' overhead, so it costs physicians money to see Medicare patients. Cost-shifting on hospital bills because Medicare only pays 40-50% of the Medicare bill is well known to all of you, but unfortunately, not to the general public. The politicians do not talk about cost shifting and discounted physician bills. The time has come to educate the populace as a whole to the true facts about Medicare.

Lastly, there is one group of patients that I feel deserve our continued support. In these hard economic times, there are many people in the work force who have lost their jobs. With their jobs goes their health insurance. They can actually self-pay by law for 18 months, but if these people have a chronic or ongoing disease, they subsequently are unable to get health care coverage for their preexisting condition. I know it is like calling your insurance agent when your home catches on fire to obtain fire insurance, but when ongoing medical problems are involved it is indeed tragic. We must bring pressure to bear on the appropriate bodies to see that this group is adequately cared for.

These are my three goals, and I ask all of you to help me accomplish these things in this coming year. Any help you can give me will be much appreciated, but remember: let our individual specialty organizations educate us, but let our state medical society and the AMA carry a *united* physician flag to the bargaining table.

Anthony P. Redmond, M.D.
President

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REFLECTIONS ON MEDICINE

The Physician as Natural Scientist and Teacher

ROBERT U. MASSEY, M.D.

THE source of all scientific and technical knowledge in middle America in the 1920s and 1930s was, it seemed to me at the time, to be physicians and high school science teachers. If between them they failed to come up with the answers, they knew where you could find out. Everything from astronomy to anatomy to how generators and steam engines worked was included in their lore, and in small towns they often held a monopoly, not only of their own esoteric learning, but of science generally; to most of us that comprised all technology as well.

This may still be true, although my hunch is that science illiteracy is more profound now than it was 60 years ago and may extend even to doctors and high school science teachers; late 20th-century science has gone beyond ordinary comprehension, dealing as it does with structures, mechanisms, and concepts that we cannot see and can barely imagine. It was easy to tell how the heart worked as a pump, even how it managed two circulations, especially if you did not need to explain myocardial contraction, ATP, and calcium channels. I remember watching working mechanical models of the circulation and respiration at the Chicago Worlds Fair in 1933; the Hall of Science seemed to attract a bigger crowd than any other building there. Perhaps this popular interest in science is around still, but I don't sense it. Talk of science, even among highly educated professionals and business people, runs quickly unto the shoals. It is easier to make headway with politics because here only perception, not reality, matters.

Unfortunately our most pressing problems on the eve of the 21st century are those that will require scientific knowledge and technical skill to solve. We shall continue blundering through our social and economic difficulties as we have for 4,000 years; some may even finally be resolved, but most will go away only to be replaced by others equally refractory. Greed will see to that. Global issues, however, like depletion of the ozone layer, the greenhouse effect on world climate, disappearance of fossil fuels, and intolerable overpopulation, of course, require political solutions too, but solutions that rest firmly upon sound science and workable, realistic technology. As members of an international community of scientists and technologists, physicians surely have a special responsibility to provide leadership, or at least lend support, in dealing with these impending environmental disasters that only a tiny percent of the world's population recognize. We are familiar with the notion of prevention, we understand the relationship between environment and health, and we daily face the consequences that engulf those who have ignored the natural law.

Sometime over 30 years ago the anthropologist Loren Eisley wrote a paper called "Man, the Lethal Factor" in which he reflected on the theme, then pervasive because of the bomb, that man would sooner or later blow up or otherwise destroy the planet. The danger of a nuclear conflagration may have diminished since then, or maybe we have simply become used to living with it, but there is another almost certain danger: by overrunning the earth and fouling the sea and air without restraint we must inevitably destroy all of sentient life, and perhaps the rest of the biosphere as well. We are faced with a world-wide disease, yet one whose fatal ending may still be turned aside if we will but use the scientific knowledge and technical resources available to us. In the decade just passed some physicians, working internationally, played a critical role in persuading our political masters that for medical reasons alone a nuclear war would be unwinnable and unsurvivable. An overheated planet with its protective ozone shield in tatters, its population growing like compound interest, and its food and energy supply running out would be unsurvivable as well and for many of the same reasons.

T.S. Eliot may have had something like this in mind when he wrote:

This is the way the world ends
This is the way the world ends
This is the way the world ends
Not with a bang but a whimper.[1]

Physicians are suspected of using their not inconsiderable political leverage mostly for their own self-interest. Working to educate the public and their leaders on the imperative need to take steps now to save the planet, even before another study is done on global warming or acid rain, would reassert the physician's honorable role as natural scientist, teacher, and good world-citizen.

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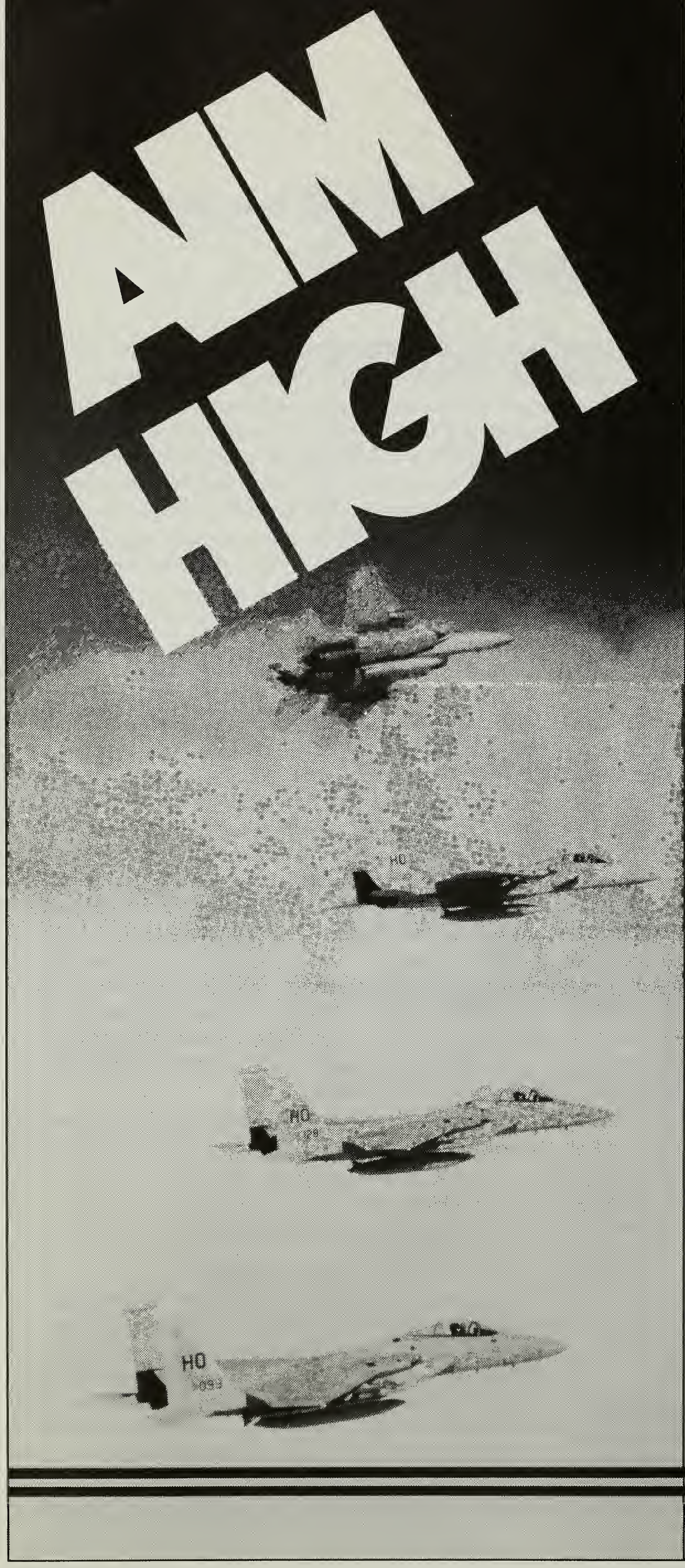

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The Doctor as Fiduciary: The *Moore* Case

JOSEPH M. HEALEY, J.D.

WHEN John Moore first visited UCLA Medical Center in 1976 for treatment of his hairy cell leukemia, little did he or any of those who became his care givers anticipate that his spleen and a cell line developed from it would become the center of a bitter controversy about ownership of organs and tissues and about the duty of a physician to discuss the commercial use of human body parts.[1] When Mr. Moore subsequently discovered that his spleen had been used to create a cell line and that his physician-researcher had entered into a contractual agreements with two companies (Genetics Institute and Sandoz) for the commercial development of the cell line and of products to be derived from it, he filed suit claiming thirteen causes of action. Among the most important of his claims were wrongful conversion of his property, lack of informed consent, and breach of fiduciary duty.

The history of the case is procedurally complex. At the trial court, the defendants (the physician, his research associate, the Regents of the University of California, and the two commercial companies) filed demurrers that were granted. Moore successfully appealed the trial court's decisions to the California Court of Appeals, which held (2 to 1) that Moore was entitled to bring the action for conversion.[2] This decision was subsequently appealed to the California Supreme Court, which held that, though Moore was not entitled to bring an action for conversion, he was entitled to bring an action for the improper performance of medical procedures based on either of two counts: (1) failure to obtain informed consent, or (2) breach of fiduciary duty.

In a decision authorized by Justice Ponelli, the majority emphasized three well-established principles as the basis of its opinion: (1) that adults have a right of self-determination with respect to health care decisions: (2) that the consent obtained from a patient must be an informed one; and (3) that a physician has a fiduciary duty to disclose information material to a patient's decision. These principles led the majority of the justices to two conclusions: (1) that physicians must disclose to their patients "personal interests unrelated to the patient's health, whether research or economic" affecting the physician's judgment, and (2) that failure to do so might give rise to a cause of action for performing medical procedures without informed consent or for breach of fiduciary duty. Thus, the majority made possible reconsideration of these issues by the Superior Court.

While most of the attention of commentators has focused on the majority's rejection of Mr. Moore's claim that he is entitled to share in the financial benefits of the commercial development of products developed from his spleen,[3] the implications of the Court's holding for disclosure obligations deserve greater attention. Under what circumstances should physicians be required to disclose their financial interests? What form should such disclosures take and when should they occur? This and other related questions will be addressed in next month's column.

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The Month's Reading in Review

TIMOTHY B. NORBECK

- A recent and unanimous decision by the U.S. Supreme Court upheld the National Labor Relations Board regulations that make it easier for unions to organize hospital workers...Only about 400,000 of the 3.4 million workers in community hospitals across the United States are union members...A general rule will now permit separate elections for eight groups: doctors, registered nurses, all other professionals, technicians, skilled maintenance workers, business office clerical employees, guards and all other nonprofessional employees...Under the old rules, professionals were typically lumped into one broad group, and all nonprofessionals (except security guards) into another.
- If farmers can be paid not to farm, why shouldn't lawyers be paid not to practice, asks Michael Frasher, a former West Virginia prosecutor and self-proclaimed "recovering lawyer"...Pointing to a University of Texas study indicating that each of the nation's 770,000 attorneys costs the United States nearly $1 million a year through litigation and legal maneuvering, Mr. Frasher suggests a plan to pay each lawyer $500,000 to turn in his or her license...He says that the savings could be used to steer would-be lawyers from law schools to what he calls "more useful" professions such as teaching.
- A new study by a team of physicians at the University of Washington Medical School (Seattle) suggests that Fetal Alcohol Syndrome (FAS) should be considered a lifelong disorder, rather than just a condition of the young...FAS sufferers had abnormally small heads, below-average height and an average IQ of 68 compared to the normal IQ of 100.
- Studies indicate that the medical cost over the life of the average Fetal Alcohol Syndrome child is $1.4 million, and such affliction is now recognized as the leading known cause of mental retardation in the United States.
- HHS Inspector General Richard Kusserow has lost his premier anti-kickback case...An administrative law judge ruled that payments to physician-investors by three clinical labs in a California network were legitimate returns on investments and not tied to referrals.
- Relatively few physicians have an ownership interest in a clinic or laboratory, reports the AMA Center for Health Policy Research...Only 8.2 percent of survey respondents indicated that they had an ownership interest.
- In a speech given May 9 that received no coverage in the general press, Vice President Dan Quayle spoke about the White House plans for reforming the litigation system...He said that by now, every neurosurgeon in Washington, D.C., has been sued at least once, there's one lawsuit filed each year for every 15 Americans and the liability crisis in now a $300 billion annual drag on the economy...The White House proposal would encourage states to set a limit on "pain and suffering," require that awards to victims not be paid in a lump sum but only in periodic payments and strengthen state medical examining boards.
- Chairman of the House Ways and Means Health Subcommittee, Fortney "Pete" Stark (D-CA.), has introduced a bill (HR 1444) which would give "near-elderly" individuals between the ages of 62 and 64 the option of buying Medicare coverage...Mr. Stark pointed out that approximately 11.5 percent of individuals ages 62 through 64 are without health insurance.
- Asian Americans have the lowest chance of dying at any age according to a report from the Department of Health and Human Services..."While socioeconomic status, education and lifestyle differences have long been considered the key reasons for differences in death rates, genetic predisposition and cultural attitudes may also play a role."
- Following through on a law signed by President Bush back in November, the National Association of Insurance Commissioners have chosen nine private health insurance policies to supplement coverage provided by the Federal Government through Medicare...These endorsed "Medigap" policies will be priced about the same as those for the current policies - $40 - $120 a month, depending on the age of the policyholder and the scope of the benefits...Insurers say they will be ready to sell the new Medigap policies by the end of this year...Henceforth, insurers will be forbidden to offer Medigap policies other than those designed and approved by the Commissioners.
- Representative Mary Rose Oakar (D-OH) claims that

TIMOTHY B. NORBECK: Executive Director of the Connecticut State Medical Society.

case management trends have severely curtailed access to treatment for alcoholism..."Most private insurance policies have dropped alcoholism treatment as a health benefit," she says, "and as a result, some 85 percent of the 18 million Americans with serious drinking problems go untreated..."It is believed that alcohol-related illness costs the U.S. $138 billion a year.

- A study by a University of Washington associate professor of orthopedic surgery revealed that job satisfaction is the most important factor determining which employees file back-injury claims...After questioning 1,569 Boeing Company employees, Dr. Stanley J. Bigos found that workers who don't enjoy their jobs are 2.5 times more likely to file back-injury claims as those who like their work...Workers who reported high emotional stress were more than twice as prone to file a claim...The Mitchum Report on Stress in the '90s indicated that 76 percent of the public experience a "notable amount of stress..."Back injury is the most common and most expensive muscle or bone problem in the U.S., and its treatment cost an estimated $30 billion annually.

- The Houston personal-injury attorney who sent pizzas to local emergency rooms (Nov. '90 House Capsule) has been upstaged!...A California lawyer admitted hiring four of the most beautiful women he could find to hang out at a singles bar on the beach near San Diego...Their assignment was to pick up married men and hand out business cards promoting the lawyer's divorce practice.

50 Years Ago

From the *Journal of the Connecticut State Medical Society*

June 1941

Our English Guests

Last July a company of 150 mothers and children, out of England, disembarked somewhere in Canada. They composed the vanguard of women and children seeking asylum in Canada and the United States for the duration of the war. In particular, they were wives and children of Oxford University dons, come to this side of the Atlantic at the invitation of Faculty Committees of Swarthmore College and Yale University, as well as personal friends and relatives. 126 members of the original group were cared for at Yale and at the Children's Center in Hamden and from there were passed on to friends and relatives as prearranged, or to foster homes provided by the Swarthmore Committee. 18 mothers and 75 children remained in the care of the Yale Faculty Committee and to this group have been added 13 more mothers and children from Cambridge, London and Oxford Universities.

The Federal Government wisely provided that proper care and supervision be exercised in the placement and maintenance of such overseas guests. Doctor Grover Powers of Yale Medical School has supervised the health program. The education of the children has been carried on as near as possible at the same level as in England. Each guest was permitted to bring over the American equivalent of ten pounds sterling. The husbands and fathers of these Oxford mothers and children have already set aside more than ten thousand pounds for the purpose of reimbursing individual American hosts, but it is the hope of the Committee that this fund may be used to promote commerce between Yale and Oxford when the present world conflict is over, looking toward the establishment of a saner social order, world wide in its intention and scope.

News Item

As much as we individually might be in sympathy with the "Bundles for Britain" movement, one recent phase of it hardly has our approval.

At several points in the country there has been a movement to collect the samples left by pharmaceutical detail men in physicians' offices and include them in the shipments for British Relief. This is an expensive and uncontrolled way of supplying pharmaceutical products.

Most all of the pharmaceutical manufacturers have individually donated supplies with vitamin capsules and other needed pharmaceutical products to the British Relief at no charge.

The packaging of a sample increases the cost and if these samples are collected and sent to Britain, then the purpose for which they were intended, that is, for the use of physicians, is not accomplished, and the heterogeneous material that reaches British Relief probably would have little value. Many samples left physicians would be dangerous if used indiscriminately without the advice of a physician.

In some cases individual City and County Medical Societies have been asked to coöperate with the collection of these samples. It is our opinion that such coöperation should be refused for the obvious reasons stated.

Letter to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent Journal article should be received within six weeks of the article's publication.

SUPPORT FOR RBRVS

To the Editor: I'm hearing a lot of the same disillusionment among my colleagues in Connecticut as is referred to in the enclosed article about the RBRVS by Dr. Joseph F. Boyle, Executive Vice President, American Society of Internal Medicine. Would you consider publishing it in the next issue of *Connecticut Medicine*?

Carl H. Braren, M.D.
President
Connecticut Society of Internal Medicine
Wethersfield, CT

RBRVS: Still Good News for Doctors

JOSEPH F. BOYLE, M.D.

When the Resource-Based Relative Value Scale first came onto the health policy scene, physicians supported it because it would introduce fairness and rationality into the Medicare payment system, unite the medical profession, and, most of all, because it would be good for patients. But lately, I've been hearing many of my colleagues say they've become disillusioned with the RBRVS's implementation—they don't trust the federal government to live up to its end of the bargain.

Well, I don't trust the federal government to live up to its bargain, either—at least not without concentrated pressure to do so. But I don't think the medical profession should write off the RBRVS. Despite many problems—some immediate and some potential—it still will do what it was intended to do.

For instance, under the RBRVS, relative values are expected to increase substantially for most evaluation and management (E/M) services. Skeptics have suggested that the RBRVS will be used only to cut surgical values—and fees. New estimates show, however, that the RBRVS will increase relative values for E/M services by 30% on average, and that, as a result, Medicare payments for these services still will increase substantially above 1991 payments under a "budget neutral" RBRVS fee schedule.

Better yet, the RBRVS protects undervalued evaluation and management services provided by all physicians *even when the budget is cut.* Consider what would happen to a $30 office visit from 1991 to 1996 under a purely hypothetical scenario in which fees normally would have been given a 15% inflation update, but Congress cuts payments 10% below inflation. In 1996, that same office visit fee would total $31.05 without the RBRVS. With the projected 30% gain for E/M services expected under the RBRVS, it would total $40.36. Especially in this budget-cutting climate, the RBRVS will protect fees for the E/M services *all* physicians provide.

Exactly what effect there will be on an individual's practice depends on several factors, however. Because of elimination of geographic differentials and limits on balance billing, for some there will be no actual gain (or even a reduction) for E/M services. Where physicians practice, how often they accept assignment, how much they charge in excess of Medicare's "approved amount" for unassigned claims and their mix of services will determine the effect on their practices. *But regardless of each individual's gain or loss, the RBRVS will enhance payments overall for physicians' E/M services compared with what would have been.*

Another benefit is that the RBRVS allows physicians to unite for a fair conversion factor and to oppose further cuts in the Medicare program, rather than engaging in internal squabbling. The conversion factor that makes the RBRVS into a real fee schedule applies to *all* physician services. That means the entire profession has a stake in making sure it's fair and an incentive to work *together* to stave off future Medicare cuts. In fact, every medical group that testified before the Physician Payment Review Commission last December, including the American Medical Association, the American Society of Internal Medicine, the American Academy of Family Physicians and the American College of Surgeons, opposed HCFA's proposal to lower the conversion factor. HCFA has indicated it will assume volume will increase and that it will set the conversion factor lower to make up for that assumed increase.

The RBRVS also provides a basis for opposing unfair cuts in specific procedures. For example, the profession can argue that the ban on reimbursement for most EKG interpretation is contrary to the RBRVS, because the study said the service indeed has a value. The influential Physician Payment Review Commission agrees, giving the profession a real opportunity to get this cut reversed.

Without the RBRVS, it would have been far more difficult to make that case.

Continued support for the RBRVS allows the profession to be *for*—not just against—something. If it wasn't for the medical profession's support for the RBRVS, we'd all be worse off. No one can say that change wasn't coming. Those who don't like the RBRVS and limits on balance billing should consider the alternatives: mandatory assignment, MD-DRGs, and fees set by the government without any professional input. The RBRVS gives the profession a voice—and it enabled us to ward off more objectionable measures.

Finally and most important, *the RBRVS is good for our patients.* It will increase the emphasis on preventive care and on evaluating and managing their treatment, and decrease the emphasis on costly high-tech services. It also will help improve access to care in underserved rural areas.

So you see, to paraphrase Mark Twain, reports of the death of the RBRVS are greatly exaggerated. But medicine can't rely on trust that everything will turn out okay. We must fight to preserve the promise of physician payment reform.

That means opposing policies that will undermine the RBRVS (such as a behavioral assumption that would lower the fee schedule conversion factor). It means working to change policies—such as the ban on reimbursement for EKG interpretation—that give with one hand and take away with the other. And it means supporting further changes that will make the system even better.

The RBRVS unites physicians under one fair and rational payment system to fight future detrimental budget cuts in Medicare. Lawmakers faced with a divided house of medicine easily can use that division to cut Medicare payments even further. But if they're faced with a profession that's united under the RBRVS, it won't be so easy.

Support for the RBRVS has been right—for our profession and for our patients. The RBRVS will protect undervalued evaluation and management services in an era of Medicare budget cutting, increase access and the emphasis on preventive care for patients, and introduce fairness into the Medicare payment system. *But we must fight together—as a profession—to make sure it is implemented in the way Congress intended.*

JOSEPH F. BOYLE, M.D. is Executive Vice President of the American Society of Internal Medicine, and past-president of the American Medical Association. Former private practitioner of internal medicine and diseases of the chest in Los Angeles.

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From the Executive Director's Office

SUMMARY OF PROCEEDINGS

CSMS HOUSE OF DELEGATES — ANNUAL MEETING

Ramada Inn, Meriden — May 8, 1991

Reports and Addresses

The House received reports, addresses and/or remarks from the President, Secretary, Treasurer, the Chairman of the Council, Delegates to the AMA, Chairman of the Board of Directors of COMPAC, the CSMS Executive Director, M.D. Health Plan, Connecticut Medical Management, Inc. (CMMI), Standing Committees, Representatives and Advisors, and Delegates from New Hampshire and Vermont State Medical Societies. All of the reports were published in the Handbook that was distributed to the delegates, with a few exceptions. The address of the retiring President, Mehdi S. Eslami, M.D. and the Executive Director, Tim Norbeck, appear at the end of this summary. The inaugural address of the new President, Anthony P. Redmond, M.D., appears as the President's Page elsewhere in this issue of *Connecticut Medicine.*

PRINCIPAL ACTIONS TAKEN

Election of Officers and Others

The House voted to approve the published report of the Nominating Committee (the Council). Officers elected were:

President: Anthony P. Redmond, M.D., Greenwich
President-Elect: Sultan Ahamed, M.D., Norwich
Vice-President: Howard J. Wetstone, M.D., Hartford
Secretary: Marjorie G. Petro, M.D., Willimantic
Treasurer: Robert R. McDonnell, M.D., New Haven
Speaker of the House of Delegates: Theodore Zanker, M.D., New Haven
Vice-Speaker of the House of Delegates: Michael M. Deren, M.D., New London
Councilor-at-Large: Mehdi S. Eslami, M.D., Waterbury
Delegates and Alternates to the American Medical Association:

Edward A. Kamens, M.D., Fairfield (D) 1/1/92-12/31/93
    Joseph C. Czarsty, M.D., Oakville (A) 1/1/92-12/31/93
Jerome K. Bobruff, M.D., New London (D) 1/1/92-12/31/93
    Roger S. Beck, M.D., Wethersfield (A) 1/1/92-12/31/93
Jerome K. Freedman, M.D., New Haven (D) 1/1/91-12/31/92
    Neil H. Brooks, M.D., Rockville (A) 1/1/91-12/31/92
Joseph S. Sadowski, M.D., Hartford (D) 1/1/91-12/31/92
    James P. Orphanos, M.D., Greenwich (A) 1/1/91-12/31/92
Stewart J. Petrie, M.D., Woodbridge (D) 1/1/91-12/31/92
    John P. Franklin, M.D., Hartford (A) 1/1/91-12/31/92

In approving the report of the Nominating Committee, it was also voted to increase the membership on the Editorial Board to 25 members, disband the Committee on the Program of the Scientific Assembly and eliminate the restriction of a five year term for delegates to state medical societies.

Bylaw Amendment

The Council introduced a bylaw amendment which would remove the specific time designated for meetings of the scientific program and section meetings. The amendment, in accordance with the Bylaws was placed on the table without discussion and shall lie on the table until the next regular meeting of the House at which meeting the amendment shall be taken off the table and acted upon by the House of Delegates.

Resolution Facilitating the Identification of HIV Infected Patients

At the last House of Delegates meeting a resolution concerning HIV Infected Patients was referred to the Council for study and report back to the House. It was voted to approve the following statements submitted by the Council as a substitute resolution:

Statement on HIV Testing

The current practice is found to be appropriate and reasonable, and Connecticut's regulations on AIDS-related testing and confidentiality are generally acceptable, although amplification of the regulations' final sentence is requested (pp 11f, subsection 4).

(a) Early HIV testing is to be encouraged on an individual basis for clinical reasons; we urge a different approach which avoids "group labels" but encourages increased usage of HIV tests at the physician's discretion with the patient's consent, based on individual indications and parameters reflecting patient benefit and appropriate clinical treatment.

(b) Secondly, legislation to single out health care workers for mandatory testing or disclosure of HIV-positive status is inappropriate. We encourage health care workers who consider themselves at risk of HIV infection to have themselves tested, and if positive, counseled.

(c) Third, HIV infection should be approached with the knowledge that early detection and early treatment is important and efficacious. Thus we can favor AMA Resolution 37, supporting classification of HIV infections as STD's and the attendant control measures. We stress the status of AIDS as an infectious disease, and urge physicians to utilize appropriately those existing Connecticut regulations which already treat AIDS as the infectious disease that it is, e.g. contact tracing, partner notification, etc.

Section of Connecticut State Medical Directors of Long Term Care Facilities

It was voted to approve the petition for the formation of a Section of Connecticut State Medical Directors of Long Term Care Facilities, subject to review of the proposed bylaws by CSMS legal counsel concerning membership eligibility.

Resolution on Smoking in Licensed Health Care Facilities

It was voted to approve a resolution submitted by the Litchfield County Medical Association on smoking with an amendment and which reads as follows:

RESOLVED: That the Connecticut State Medical Society supports legislation restricting smoking to designated areas in licensed health care facilities throughout the State of Connecticut.

Resolution to Establish CSMS Committee on Alcohol and Other Drug Dependency Education

It was voted to approve a resolution introduced by the Fairfield County Medical Association that CSMS establish a Committee on Alcohol and Other Drug Dependency Education with the charge to study topics related to the health aspects of alcohol and other mood altering drugs of addictive potential, to develop policy recommendations to present to CSMS, to promote education of the public and our peers in this area, to advise voluntary and state agencies on related topics. It was further voted that the CSMS Council appoint up to twelve members on the committee and name the chairperson thereof, and that these names be submitted to the next meeting of the House of Delegates for confirmation.

CSMS Charitable Trust

The second annual donation from the CSMS Charitable Trust was awarded to the Salavation Army. A check for $25,000 was presented to Captain Norman E. Wood, Secretary of the Southern New England Division of the Salavation Army, by fund trustee, Roger S. Beck, M.D., as a gift from the members of the Connecticut State Medical Society.

Dr. Roger S. Beck, Chairman of the fund's Board of Trustees, reported that the Society's physician leaders organized the CSMS Charitable Trust recognizing that various social problems relating to poverty impact adversely on the health of many patients. He was pleased to report that the fund to be distributed this year was increased by $10,000 over that of 1990.

Awards

American Medical Education and Research Foundation (AMEF)

Dr. Eslami presented the following awards:

Yale University School of Medicine	$10,435.02
University of Connecticut School of Medicine	$7,625.00

Robert Gifford, M.D., Associate Dean for Education and Student Affairs, accepted the check (Yale).

Carl F. Hinz, M.D., Associate Dean for Academic Affairs & Clinical Education, accepted the check (University of Connecticut).

The grants to the two medical schools were increased this year by $11,308.50.

Connecticut Science Fair Awards

Dr. Eslami presented the following awards:

First Place—Senior Division—Miss Mira Rho, Amity Junior High School

Project: "Is Antibiotic Resistant Plasmid DNA Present in Our Environment?"

First Place—Junior Division—(Joint Winners) Mr. Joseph Pellecchia and Mr. Claudio Guerrera, St. Raphael School, Bridgeport.

Project: "Temperature Shift Experiment on *E. coli* Y1090 And Genetically Engineered Lambda GT 11"

Each winner received a plaque and a check.

Address of the President

CSMS Annual Meeting

MEHDI S. ESLAMI, M.D.

Let me thank you all for your support during the past year. Organized medicine was well and thriving. You and the officers of the State Medical Society conducted the business of organized medicine admirably. I want to take this opportunity to give credit to the CSMS Council, standing committees, and the staff for carrying out the activities of the Medical Society in such a professional manner. The Handbook you all received reflects the work of the Council, Standing Committees, Executive Director and Staff. I am sure all of you had an to opportunity to review their accomplishments. I would like to highlight the work of some of the standing committees: the Committee on Continuing Medical Education in the past few years has been engaged in accreditation of CME programs of hospitals and medically related organizations in the state. The Editorial Committee of *Connecticut Medicine*, under the leadership of Dr. Robert U. Massey, Editor, publishes *Connecticut Medicine* and I am sure all of you read it. The Committee on Public Affairs this year published the CSMS Health Awareness pamphlets. Our Committee on Legislation, Cancer Coordinating Committee, Physician Health and Committee on Medical Aspects of Sports have all been busy, just to mention a few.

Your AMA delegates and alternate delegates have presented your views at the AMA annual and semi-annual meetings. At this point, I would like to solicit the support of the House to increase the AMA membership in the state to over 4,000 members, to enable CSMS to maintain 5 AMA delegates and alternate delegates. We are at the present time below 4,000 AMA members.

On the legislative front and governmental affairs, your State Medical Society is in the forefront of legislative actions. In 1990, your Committee on Legislation opposed mandatory assignment for Medicare, direct access for physical therapist, and the triplicate prescription form. We supported regulation of utilization review agencies, changing the law concerning epileptic drivers, just to mention a few. Through your COMPAC, we supported legislators who supported medicine. In 1991, new legislators took office with the new independent governor. The budget deficit is the main topic of the new legislature, but there are many bills of concern to medicine that were introduced as usual: Medicare assignment, direct access to physical therapist, chiropractors to conduct school athletic physical examinations, optometrist to use and prescribe drugs, regulation of utilization review agencies, and the transfer of disciplinary hearings from the Medical Examining Board to an independent hearing panel, along with a host of other medical related bills. Your Committee on Legislation developed a strong position in regard to those bills and your representatives have testified in legislative hearings and submitted written statements.

Direct access to patients for physical therapist and chiropractors conducting school athletic physical examinations have been voted down by the committees. The Medical Examining Board bill was rewritten and the Board was strengthened. Licensing of utilization review agencies has passed the committee with a favorable vote, optometrist to use prescription drugs has also passed the committee with a favorable vote and Medicare assignment also passed the committee with a favorable vote. But they must pass the Senate and the House.

Once again, let me say that we are a strong and viable entity, and I ask your for your continued support to help CSMS continue on the straight but increasingly difficult road.

I want to express my thanks and appreciation to the CSMS membership as a whole, the House of Delegates, Council of CSMS, committee members and their chairpersons for their support and for the jobs well done. I would be remiss if I did not mention the support of our outstanding staff of CSMS and their excellent performance of their job and their support and advice to me. With their support and guidance, we could not accomplish what we have done in the past year. My personal thanks go to Tim Norbeck, Josephine Lindquist, Bob Brunell, Kyle Ballou, Marc Garofalo and the entire staff.

Thank you again for the opportunity to serve you.

Address of the Executive Director

1991 CSMS Annual Meeting

TIMOTHY B. NORBECK

When the great 18th century poet Alexander Pope was lying on his deathbed, his physician gave him encouragement. "Your breathing is easier, your pulse is steadier," he told him over and over in his best bedside manner. "Here I am," Pope lamented to a friend, "dying of a hundred good symptoms."

Now some 200 years later, the same might be said of our health care system - at least if you listen to the media and certain auto makers.

I don't know if you saw a rather obscure item in the newspaper the other day about Chrysler's Lee Iacocca—that pillar of industry who has become a notable doctor basher. It seems that Chairman Lee's compensation for 1990 rose 15 percent to $4.6 million—enough for him to get by, I guess,—despite the fact that the automaker's profits plummeted 81 percent. It is interesting to note that the Chairman of both General Motors and Ford took big cuts ($1,075,000 and $1,200,000 respectively - not exactly pocket change, but cuts, nonetheless, and earnings less than one-third of what Lee makes. As UAW President Owen Bieber noted: "This payout is particularly hypocritical at Chrysler, given that their executives have loudly and frequently proclaimed the need for cost-saving sacrifices from workers, suppliers and even their own stockholders."

Maybe it's true about the dream that Iacocca allegedly had the other day. He has been rumored, of course, as a presidential candidate and late one night the devil came to his house and offered him a deal. "He offered me the presidency in exchange for my soul," Iacocca explained. "So I said: What's the catch?"

If you saw U.S.A. Today on Monday, just two days ago, a lead article in the MONEY Section proclaimed: "Doctors' Soaring Incomes; Does their high pay help boost health-care inflation?" It reminded me somewhat of the headlines from an International Summit on the Economics of Health Care Systems held last summer.

Among the criticisms of our system and physicians came the indictment that the highest American physician incomes were 5.4 times that of an average American worker, and this was compared with the average of 3.3 times for physicians versus workers in Great Britain, France, Japan, Germany, Italy and Canada. As if one could compare practices and expenses of American physicians with your colleagues from those other countries.

While you are being criticized for making 5.4 times that of the average worker in the U.S. for saving lives and bearing more difficult responsibilities, and all the other headaches attendant to your practices, I couldn't help noticing that the average CEO in American business received $1.9 million in compensation. That happens to be 85 times that of the average U.S. worker's pay - not to mention the paid vacations, use of the company plane and a myriad of other fringe benefits.

This leads me to the very important subject of physician image. We are all frustrated by the polls which indicate that on one hand, a substantial majority of the American public appears very satisfied with their own physician and the care received, but on the other hand, they are distrustful of physicians as a group. For example, the AMA's public opinion poll of 1991 indicates that the public's favorable opinion of their personal doctors is rising. At the same time, there was some slippage of an already somewhat low opinion of doctors in general. This difference between the public's opinion of their own physicians and doctors in general is called the "image gap", and it's widening.

Of course, and if you don't mind my mentioning it in the same breath, Congress has the same problem but to a worse degree. For example, a N. Y. Times/CBS News Poll indicated the 69 percent of those queried said they disapproved of the way Congress was handling its job - but in the same poll, 51 percent said they approved of their own Congressman or woman. This gap has been explained as an anti-institution bias that the American people have. But somehow that explanation doesn't satisfy me.

Can that reason really explain the extraordinary gap of 59 points in the AMA poll? Here some 69 percent agreed with the statement that "people are beginning to lose faith in doctors" while only 10 percent said that about their own doctor. A strong reason for this gap must be the pervasive influence of the news media. As *New York Times* reporter Steven Holmes has suggested; with newspaper, radio and television constantly focusing people's attention on national woes, the public begins to believe that it really is a jungle out there. Yet what is seen on the nightly news or on the front page of the newspaper often does not square with one's own experience.

Frank Newport, editor in chief of the Gallup Poll explains it this way: "When asked for a quick response over the telephone, people have to immediately find a frame of reference. They first go from experiential data—their own lives and their community" he says. "But when assessing what's happening around the nation and the world, they can't use experiential data. They must use other sources of information, ie what they've seen in the media." And we know how the media and government portrays physicians, the medical profession and the posturing of health care costs. While these explanations may shed some light on the reasons for the image gap, the problem remains as frustrating as ever - as well as trying to devise some solutions.

But let's go deeper into the problem. In 38 different surveys taken over the past 5 years, when asked, "Are you satisfied with the medical care that you receive," the average response was that it is of quality. On the question "Do you view this care at least as excellent or good", 81 percent said "yes" and only 3 percent said they viewed it as "poor". But when asked, "What do you think of the American health care system," suddenly the high ratings drop to 35 percent.

Interestingly enough, those who are most satisfied are those with low incomes, over 55 and with less than a 12th grade education. Satisfaction is lowest among those who make more than $100,000 a year and those with post-graduate education.

As everyone in this room knows too well, the fact is that the news coverage and the front page articles are not about the success stories; they are about the failures. They're not about the physicians or hospitals that succeed in accomplishing the minor miracles; they're about the alleged malpractice cases.

While it may be next to impossible to educate the national media, it becomes all the more necessary for us to educate the American public on health care matters - or to at least minimize the damage and maximize the positive things about medicine. A stronger federation of medicine - the AMA and state and county medical associations - can only help as the job gets more difficult each year.

Recognizing the importance of education, Thomas Jefferson once said that "A nation that seeks to be both free and ignorant, never was and never will be." And that applies to medicine, too. Let me give you an example:

When those employees provided with health insurance by their employer were asked in a major national survey: "Can you tell us an approximation of what your employer spends to provide you with health insurance?," a full 72 percent responded that they had no idea. The vast majority of those with health insurance had never been told by their employer - at least to an understandable level - what it all costs. Yet, if they don't know what the employer pays, the answer to the next survey question is even more intriguing. On that second question, respondents were asked the following - "If tomorrow your employer were to say, I'm going to take away your health insurance, how much would you demand that they give you in increased cash compensation?" The average response was $4,800 a year. *But 37 percent said they would give up the health insurance for $500 a year or less.* That's better than one out of three people who actually have no idea about the costs of medical care and insurance. Our system has failed miserably to educate a very substantial minority of people as to these overall costs and obviously their role or personal responsibility in helping to keep a lid on costs. Few would disagree - particularly today - that every private citizen has a public responsibility in this regard.

The pollsters also tell us that although support among the American public for some sort of national health insurance plan is at a 40-year high, the level of that support declines in proportion to the increase in taxes proposed to finance it. And that public is coming in greater numbers to the realization that the federal government would not be a desirable single payer in whatever program or plan is adopted. They look at Medicare and see a Congress that, in every one of the last nine federal budgets, reduced what is provided by the program. They see a Medicaid program in which more and more people near the poverty level have been stricken from the rolls and states which have not paid their fair share. Too often do we hear stories like the one of the very much alive Oklahoma resident, Helen Bates, who complained that the Social Security Administration demanded that she return her February check because she was dead. "But I'm not dead," said Mrs. Bates, "I called Social Security and told them. They said I'd have to prove that I was alive." As the Farmer's Almanac said: "If Patrick Henry thought that taxation without representation was bad, he should see how bad it is with representation."

As critics so fondly remind us, surveys indicate that the American public is not happy with our health care system. In a recent ten-country survey which some of them happily refer to, only Italy had the same degree of dissatisfaction as expressed by the American public. But this dissatisfaction, if you will, over our system is not really related to the delivery part. Nor is it related to costs inasmuch as surveys indicate that the public wants more spent on health care. All the polls indicate that a substantial majority of the American public are very satisfied with their care and their physicians.

If neither the cost of American health care nor its quality are the source of dissatisfaction with our health care system, then that dissatisfaction must be rooted in the insurance system by which care is financed.

When people talk of rebuilding or the need for fundamental reform of our system, Economist Uwe Reinhardt feels that they are talking about our health-insurance system. As he points out, countries whose citizens give their health care system a relatively high rating provide those citizens with secure health-insurance coverage that is portable between jobs and localities and whose premium is divorced from the individual's health status. Their citizens don't worry about job-lock, that fear of changing jobs because of a previous medical history. Their cancer patients don't worry about a waiting period before they can secure coverage. Their insurance systems are administratively simple. In comparison, our insurance policies are confusing, not portable and are priced to reflect the health status of the individual.

The rest of the world seems to feel that it is repugnant to charge higher premiums for someone just because that someone is unfortunate enough to have a special illness. The rest of the world would find it equally repugnant to charge a poor person the same as a wealthy person. The rest of the world wouldn't deny someone health insurance protection just because that someone is afflicted with poor health. Our Medicare program, of course, subsidizes health care for the well-to-do elderly, but its benefits are limited and many low-income elderly have to spend large proportions of their meager incomes on health care. Few if any other countries impose such a hardship upon their low-income elderly. And perhaps only in America would we have some states where a poor person making $1,417 a year for a family of three isn't eligible for Medicaid because that income is too high and others like Connecticut where a family of three can still be eligible with an income of $9,276. In fact, in all but a handful of states, that family of three must have an income of less than $7,000 to qualify for the program. The disparity is callous and ridiculous, and most states just aren't paying their fare share. And physicians are being blamed for all these happenings and shortcomings - mainly because the American public doesn't understand the issues involved. You may not personally be taking the blame for the confusing state of insurance affairs, but your colleagues are - those other physicians in general.

In closing, everyone in this room, of course, is interested in changing our present tort system. A recently released five-year $1 million study commissioned by the American Law Institute gives us more than a glimmer of hope. The report is significant because the Institute often guides courts and legislatures on legal questions. A package of changes are recommended, including the limiting of awards on pain and suffering to only the most serious injuries, cutting back on punitive damages and establishing no-fault systems for medical malpractice and mass-disaster cases. It puts tort reform on the agenda and is something that law schools will discuss and courts and legislative bodies will note. And it gives Congresswoman Nancy Johnson a boost in her efforts to secure federal tort reform.

With 66 lawyers in the U.S. Senate, I wouldn't look for Washington to take too kindly to these recommendations, but this study is a major work by a respected organization with absolutely no ties to medicine. The discussions and debate alone as a result of the study are reasons to be optimistic. At last, perhaps, we are going to have a real national forum on tort reform. So there are some positives for us to build on. Your patients feel very kindly toward you, but it's those other physicians — a bias they get from the national media and which is heavily reinforced every day. Our challenge is immense and we have a major educational task ahead of us with all your patients and your colleagues' patients. We must also sit down with the insurance industry and help effect change.

As Henry V uttered while planning a victory against a foe that outnumbered him five to one: "All things are ready, if our minds be so."

IN MEMORIAM

AUDET, CHARLES H., Maryland, 1946. Dr. Audet was a surgeon in the Waterbury area since 1947. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society; died in January at the age of 69.

BARNEY, WALTER E., Yale, 1935. Dr. Barney was an anesthesiologist in the New Haven County area since 1937. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 18 February at the age of 85.

BEATRICE, ALPHONSE A., Tufts, 1929. Dr. Beatrice was a general surgeon in the Bristol area since 1929. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 13 February at the age of 86.

BELLIZZI, JOSEPH J., Tufts, 1947. Dr. Bellizzi was a pediatrician in the Hartford area since 1950. He was a member of the Hartford County Medical Association, and the Connecticut State Medical Society; died 26 of February at the age of 69.

BRAAT, JOHANNES P., Utrecht, Holland, 1930. Doctor Braat was a neurologist and psychiatrist in the Manchester area since 1960. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 3 April at the age of 86.

CAPOBIANCO, ARTHUR P., New York, 1940. Dr. Capobianco was a general practitioner in the Fairfield County area since 1942. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society; died 19 January 1991 at the age of 75.

CHIOTA, JOSEPH A., Vermont, 1937. Dr. Chiota was a general surgeon in the Fairfield area since 1940. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association, died 2 May at the age of 78.

CLEMENT, DAVID H., Harvard, 1935. Dr. Clement was a pediatrician in the New Haven area since 1946. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 1 March at the age of 81.

FUTTERMAN, EDWARD H., Columbia, 1956. Dr. Futterman was a psychiatrist in the New Haven area since 1959. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society; died 23 March at the age of 59.

GAMMILL, JAMES F., Columbia, 1948. Dr. Gammill was an internist in the Darien area since 1954. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 28 April at the age of 65.

HOWARD, LAURA K., University of Minnesota, 1929. Dr. Howard was a psychiatrist in the Hartford County area since 1946. She was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 2 February 1991 at the age of 90.

JOHNSON, HOWARD K., Jefferson, 1958. Dr. Johnson was an internist in the New London County area since 1964. He was a member of the New London County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 14 January 1991 at the age of 60.

KANSLER, FREDERICK N., SUNY, 1964. Dr. Kansler was a radiologist in the Sharon area since 1989. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society and the American Medical Association; died 17 April at the age of 54.

MARSH, ALEXANDER, St. Andrews, Scotland, 1937. Dr. Marsh was a family physician in the Hartford area since 1950. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 28 March at the age of 81.

MARX, FRANK G., University of Pennsylvania, 1953. Dr. Marx was an obstetrician and gynecologist in the New London County area since 1963. He was a member of the New London County Medical Association and the Connecticut State Medical Society; died 23 January 1991 at the age of 63.

MCNULTY, TERENCE F., Georgetown, 1932. Dr. McNulty was an obstetrician and gynecologist in the Hartford area since 1933. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 13 April at the age of 83.

O'NEILL, JOHN J., Tufts, 1948. Dr. O'Neill was an internist and then named medical director at the Supreme Office of the Knights of Columbus, New Haven. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 21 March at the age of 68.

RUBIN, ALBERT, Geneva, Switzerland, 1929. Dr. Rubin was a dermatologist in the Hartford County area since 1946. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society; died 13 January 1991 at the age of 88.

SCHREUDER, OTIS B., University of Portland, Oregon, 1924. Dr. Schreuder was a general practitioner in the Hartford County area since 1965. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 24 January 1991 at the age of 97.

SPEKTER, LOUIS, Rochester, 1933. Dr. Spekter was a pediatrician in the Hartford area since 1937. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 30 April at the age of 82.

TALBOT, HENRY P., Maryland, 1927. Doctor Talbot was in Public Health in the Hartford area since 1931. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association, died 12 December 1990, at the age of 92.

VECCHIOLLA, JOHN A., Columbia P&S, 1954. Dr. Vecchiolla was an internist in the Hartford County area since 1957. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association; died 10 January 1991 at the age of 64.

WHEELER, GORDON B., Boston Univ., 1945. Dr. Wheeler was a general practitioner in the Chester area. He was a member of the Middlesex County Medical Association and the Connecticut State Medical Society; died 12 April, at the age of 71.

To All Employers—Supervisors of Physician's Assistants

Recent state law now mandates that all Connecticut Physician's Assistants (PAs) must pass the national PA boards and maintain current certification. PAs that are not currently certified have until June 21, 1991 (late date July 15) to apply for the 1991 boards held annually in October. The National Commission on Certification of Physician's Assistants (NCCPA) is the certifying commission and may be contacted at 2845 Henderson Mill Road, Atlanta, GA, 30341 or by calling (404) 493-9100.

Licensure for Connecticut PAs is forthcoming. The Health Department may be contacted at 566-1035 to check on the current status of PA licensure. Further questions may be directed to the Connecticut Academy of Physician's Assistants at P.O. Box 8924, New Haven, CT, 06532 or by calling 785-6237.

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities* should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203)-865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities.

***Physicians wishing to locate* in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

Announcements on the Physician Placement Service page under Classified Advertising are charged at the regular Classified Advertising rate.

OPPORTUNITIES FOR PRACTICE

AMBULATORY CARE

Family or General Practice Physician for Ambulatory Care Center providing acute and continuing care in the South End of Hartford. Well-rounded medical background and good patient communicating skills required. A great opportunity for low financial risk while building a private practice within a walk-in setting. Competitive salary and excellent hours. Buy-in/purchase options available. Please send CV to David R. Howlett, M.D., 13 Church Road, East Granby CT 06226, or call (203) 653-4526.

EMERGENCY MEDICINE

ESSEX, CONNECTICUT: Part time position (averaging 28 hours per week) in emergency department of free-standing satellite of 380 bed community hospital. Open 8:00 AM to Midnight, 365 days per year. 30,000 patients per year. Unique combination of emergency and acute care medicine. Full emergency department privileges. Paramedic base station. Beautiful shoreline area. Seek FP/IM/EM/ BC/BE individual, ACLS, ATLS. ED experience preferred. Highly competitive salary and benefit package. Excellent schedule, with no graveyard shifts. Contact Michael Saxe, M.D., Medical Director, Middlesex Medical Center, Shoreline, 260 Westbrook Rd., Essex Ct. 06426. (203) 767-0107. Equal Opportunity Employer.

INSTITUTIONAL/INDUSTRIAL MEDICINE

Part-time physician needed for sexually transmitted diseases clinic and international travel clinic at the New Haven Health Department. Please call the Medical Director at 787-8184, or send resume to: New Haven Health Dept., c/o Medical Director, One State St., New Haven CT 06511.

INTERNAL MEDICINE

BC/BE internist wanted to join busy 3 internist group in New Haven area. Send CV to Box.

Full-time Internist for a Community Health Center in Hartford, Conn. Excellent Benefits/Relocation Call Dr. Reddy (203) 236-0857

NEUROLOGY

Connecticut BC/BE neurologist wanted to join established five person group in single hospital private practice setting. Competitive salary with benefits leading to partnership. For details fax CV to (203) 790-6375 or write Jan Mashman, M.D., Associated Neurologists, 69 Sand Pit Rd., Danbury, CT 06810-4088.

PEDIATRICS

Exceptional opportunity to join a pediatric group practice of four BC/BE pediatricians located in shoreline community five miles from Yale-New Haven, our chief hospital affiliation. Sole owner was original partner in 1955. Start at $80,000 with buy-in option after one year. Part time position also available. Call (203) 248-4846 any evening after 8:00 P.M.

CHCP, a prepaid multispecialty staff model HMO, is seeking a BC/BE pediatrician for its Waterbury Health Center. Waterbury is a medium size metropolitan area with several lovely suburban communities. Come enjoy the opportunity to really practice medicine without worrying about insurance, billing, and staffing problems. Affiliations with St. Mary's and Waterbury Hospitals enable staff to practice high quality patient care and maintain clinical skills in the setting of an established HMO. Highly competitive compensation package with attractive benefits. Send CV to Maria Mora, Human Resources Dept, CHCP, 221 Whitney Ave., New Haven CT 06511.

PRIMARY CARE

Physician interested in working full-time at our walk-in medical center. Excellent hours, competitive salary, malpractice and health insurance, vacation, and CME time available. We are located in Bristol, CT. Please contact: Dr. Thomas Kandell (203) 651-9402 or Dr. Ronald Falit (203) 271-3159, office (203) 584-8900.

Physician needed full time for an ambulatory care center in the Greater Bridgeport area. Broad general medical, orthopedic, and minor surgery skills required. F.P., E.M. and general I.M. preferred. Salary and benefits commensurate with experience. Please send CV to Dominick V. Sorge, M.D., 4490 Main Street, Bridgeport, CT 06606.

PRIMARY CARE—continued

The University of Connecticut Health Center/John Dempsey Hospital in Farmington seeks a part-time Clinical Physician in the Department of Medicine to provide clinical services and supervision in an ambulatory care setting serving employees and students of the Health Center and Hospital. Licensure in Connecticut required; BC/BE in Internal Medicine or other appropriate specialty preferred. Contact: Eileen Storey, M.D., M.P.H., Director, Occupational Medicine Program, UConn Health Center, Farmington, CT 06030. UConn Health Center is an affirmative action, equal opportunity employer.

Practice for sale in lower Fairfield County; includes Condo office in modern building, fully equipped with two consultation rooms, two examination rooms, x-ray, EKG, two receptionist areas and large waiting room. Opportunity to assume current primary care practice on impending retirement of present physician through sale arrangement. Reply with letter of interest to CSMS, c/o PC/UA.

PRIMARY CARE/INTERNAL MEDICINE

Excellent opportunity for physician interested in Primary Care to take over existing practice established over 20 years. Must purchase existing equipment. Contact Boris Pukay, M.D. (203) 536-3165.

PULMONOLOGIST/INTENSIVIST

BC/BE pulmonologist sought to join two busy pulmonologist/ intensivists/internists in Central Connecticut. Modern 200 bed community hospital; university affiliation available; competitive financial and benefit package leading to full partnership; 80% pulmonary/ critical care during first year with increasing pulmonary/ICU as practice builds; special qualification negotiable; New York, Boston, Hartford access.

RADIOLOGY

Central Connecticut. Full or Parttime BC Radiologist wanted for busy community hospital practice. Experience in General Radiology, Ultrasound, CT and Nuclear Medicine preferred. MRI available. Send CV to CSMS, c/o JW

PHYSICIANS WISHING TO PRACTICE IN THE STATE OF CONNECTICUT

INTERNAL MEDICINE

Immediately available. Age 33. Conn. license, AB elig. D.O.: Univ. of New England College of Osteopathic Medicine, Biddeford Me.; Int.: Community General Osteopathic Hospital, Harrisburg Pa.; Res.: Framingham Union Hospital, Framingham Mass. Any size community within commuting distance of Hartford. Please write Ronald W. Ashkenasy, D.O., 121 Shadow Lane, Apt. B-8, West Hartford CT 06110-1667.

INTERNAL MEDICINE/ONCOLOGY

Immediately available. Age 35. Conn. license, Natl Bds., AB elig. M.D.: UConn School of Medicine. Farmington Ct.; Int. and Res.: North Shore Univ. Hospital, Cornell Medical School; Fellowship: Memorial Sloan Kettering Cancer Center. Prefers group or institutional type practice. Please write Joseph J. DiMaggio, M.D., 130 Salerno Ave., East Haven CT 06512, or call (203) 469-7468.

PEDIATRICS

July '91. Age 30. AB elig. MD, Bucharest University, Romania; Int. and Res., Flushing Hospital Medical Center, NY. Prefers group. associate or institutional type practice in a medium-sized community. Write, Valerian Hazan, M.D., 62-65 Saunders St., #2A, Rego Park, NY 11374.

RADIOLOGY

Immediately available. Age 64. Licensed in Connecticut. Nat'l bds. AB cert. MD, Georgetown University, Washington, DC; Int., St. Francis Hospital, Hartford, CT; Res., Temple University Hospital, Philadelphia, PA Prefers hospitals or group practice with hospital affilitation. Full or part-time. Write, CSMS, c/o JRG/RAD.

UROLOGY

July '91. Age 32. Nat'l bds. AB elig. MD, University of Connecticut School of Medicine, Farmington, CT; Int., Michael Reese Hospital and Medical Center, Chicago, IL; Res., University of Medicine and Dentistry of New Jersey, Newark, NJ. Prefers solo, group or associate type practice. Write, Harvey R. Samowitz, M.D., 142 Washington St., Bloomfield, NJ 07003.

PAID CLASSIFIED ADVERTISING

All PAID classified advertising orders, correspondence and payments should be directed to: CONNECTICUT MEDICINE, Classified Department, 160 St. Ronan St., New Haven, CT 06511, Tel. (203) 865-0587. The classified rates are as follows: $60.00 for 25 words or less; plus $1.00 for each additional word. For confidential answers, the cost is $3.00 per insertion, sent in care of CONNECTICUT MEDICINE. Ad copy typewritten, double spaced, with payment, must be received no later than the first day of the month preceding month of issue.

Information for Authors

Manuscripts

Manuscripts should be submitted to **Robert U. Massey, M.D., Editor, CONNECTICUT MEDICINE,** 160 St. Ronan St., New Haven, CT 06511, **in original and one duplicate copy.** The author should retain another copy for his records. A covering letter should identify the person (with the address and telephone number) responsible for negotiations concerning the manuscript; the letter should make it clear that the final manuscript has been seen and approved by the authors.

Author Responsibility

The author is responsible for all statement, including changes made by the copy editor. Manuscripts are received with the explicit understanding that they are not simultaneously under consideration by any other publication. All manuscripts are acknowledged upon receipt and are followed up by notification of either acceptance, revision, or rejection. Although rejected manuscripts are returned the author, the *Journal* is not responsible for loss. Accepted manuscripts become the permanent property of the *Journal* and may not be published elsewhere without permission from both the author and the *Journal.*

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Manuscript Preparation

Copy must be typewritten double-spaced on ($8\frac{1}{2}$ x 11-inch) heavyduty, white, bond paper. This requirement applies to all text elements: references, legends, footnotes, and others. Pages should be numbered. Authors should generally follow *JAMA* style or consult *Manual for Authors & Editors,* Eighth Edition, 1989, compiled for the AMA and published by Williams & Wilkins.

Titles and Author's Names

The first page of the manuscript should include (A) title of paper; (titles should be short, specific, clear, an amenable to indexing; (B) name of author(s), including first name(s) and academic degree(s); (C) List hospital positions for each author and any institutional or other credits. If an author's present affiliation is different from the affiliation under which the work was done, both should be given. Include academic appointments when applicable.

Units of Measurement

Express all measurements in Système International (SI) units, but include older conventional units in parentheses if desired. Use Celsius for temperature.

Abstracts

The second page should contain an abstract of not more than 150 words. This abstract should be factual, not descriptive, and should present the reason for the study, the main findings (give specific data if possible), and the principal conclusion. Do not include a summary.

References

The following minimum data should be typed double-spaced: names of all authors, complete title of the article cited, name of journal abbreviated according to *Index Medicus,* year of publication, volume number, and first and last page numbers. All references must be cited in the text. They should be arranged according to the order of citation, and not alphabetically. All references must be numbered consecutively. Numbered references to personal communications, unpublished data and "in preparation" are unacceptable. If absolutely essential, such material may be incorporated in the appropriate place in the text or as a footnote. Sample references are as follows:

1. Jones J: Necrotizing *Candida* esophagitis. *JAMA* 1980;244:2190-91.
2. Kremer H, Kellner E, Schierl W, et al. Ultrasonic diagnosis in infiltrative gastrointestinal diseases. *Dtsch Med Wochenschr* 1978;103:965-6. Abstracted, *JAMA* 1978;240:2784.
3. Influenza vaccine—recommendations of the Public Health Service Advisory Committee on Immunization Practices. *MMWR* 1979;28:231-8.
4. Fischer DH: *Growing Old in America.* New York, Oxford University Press, 1977, pp 210-6.

Tables

Data presented in tables should be self-explanatory and should supplement, not duplicate, the text or figures. Excessive tabular data are discouraged. Each table should be typed double-spaced, including all headings, on separate sheets of $8\frac{1}{2}$ x 11-inch paper. Oversize papers should not be used. Instead, repeat heads and stubs on a second sheet for tables requiring extra width. Number tables consecutively with respect to citation in the text. Each table must have a title.

Illustrations

Figures should be professionally drawn and photographed, if possible. Glossy, clear black and white photographs should be submitted.

Line drawings, graphs, and charts should be done in India ink on high-grade white drawing paper. Lines should be examined for evenness, breaks, and proper alignment. Lettering and symbols should be clear and of even density throughout. Symbols, lettering, and numbering should be of such proportioned size that when the figure is reduced to *Journal* column width (8 cm) each item will be distinctly recognizable.

Do not send original artwork or black and white negatives.

Each figure should have a label pasted on its back indicating the figure's number, the names of the authors, and the top of the figure. Do not mount the figure on cardboard. Do not write on the backs of figures, nor expose them to paper clips.

If photographs of patients are used, either the subjects should not be identifiable, or their pictures must be accompanied by written permission to use the figure.

Legends for illustrations should be typewritten (double spaced) on a separate sheet with numbers corresponding to the figures.

Drug Names

Generic names should be used. If an author so desires, brand names may be inserted parenthetically.

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Review and Action

All manuscripts are subject to review by referees in appropriate fields of medicine. Authors are usually notified within three to six weeks as to the acceptability of a manuscript, but sometimes longer delays are unavoidable.

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